

Technical Report 2401

Criterion Validity and Classification Accuracy of easyCBM:

Grades 3-8

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Published by

Behavioral Research and Teaching
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5262 University of Oregon • Eugene, OR 97403-5262
Phone: 541-346-3535 • Fax: 541-346-5689
<http://brt.uoregon.edu>

Note: This technical report was supported in part by Riverside Insight, the exclusive distributor of easyCBM. The report does not reflect any endorsement by any of these organizations.

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APA Reference: Tindal, G. & Nese, J. F. T., & (2024). *Criterion validity and classification accuracy of easyCBM: Grades 3-8.* (Technical Report # 2401). Eugene, OR: Behavioral Research and Teaching, University of Oregon.

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Abstract

We present two types of validity evidence to support inferences and decisions about use of easyCBMs in relation to state testing programs. The first type involves the use of Benchmarks in reading to use in making predictions of performance on the Smarter Balanced (SB) test. These predictions can be made both well in advance (several months) or nearly concurrent with administration of the SB test. The second type of validity evidence supports the use of Benchmarks in screening students for risk of problems in learning to read. With data from two states and four school districts, we analyzed well over 8,000 anonymized records, with students reflecting a broad range of demographics. In the **first section** of the report, we present both the grade level demographics of this sample and their performances on the following easyCBMs in the Fall, Winter, and Spring: Proficient Reading, Vocabulary, Oral (Passage) Reading Fluency, and Math. Criterion validity data (both predictive and concurrent) are first presented for grade level easyCBM raw scores for each measure correlated with the SB test. However, because different CBMs were used within and across grades, we also computed a composite that reflected a standard score (with z-scores computed for each grade level in reading and math). This score transformation allowed both correlations and regression analyses to be presented between easyCBMs and SB using this composite. In the **second section** of the paper, we present the results of a classification analysis and report a range of statistics: cut points for the 20th percentile rank (PR), classification data (true and false positives and negatives, area under the curve (with 95% confidence intervals for the lower and upper bounds), base rates, overall classification rates, sensitivity and specificity, false positive and negative rates, and finally positive and negative predictive power. The results from these classification analyses support the use easyCBMs as screeners with high AUCs, high values of sensitivity and specificity, and across the board high values of positive predictive power.

Introduction

This report complements previous BRT technical reports on the technical adequacy of easyCBMs in Grades 3 through 8 (Anderson et al., 2014), where various forms of reliability and validity information were summarized. In this report, however, we focus only on validity. According to the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014), validity addresses the trustworthiness of the test outcomes and the degree to which inferences and decisions can be supported from the test outcomes. Validity is not of the test, but of the inferences and decisions made from the test.

Several types of validity are necessary, depending on the decisions, including content (item coverage and alignment with important content being measured), construct (the substance of the measure), criterion (relations of the measure with other, independent measures), and response processes (the degree to which the measure is accessible to the measure). In this research report, we focus on criterion validity (both predictive and concurrent), using the SB test, which is typically given at the end of the year to students in Grades 3 to 8.

We have divided the report into two major sections: (a) descriptive statistics on students' demographics and performance on all measures, as well as the relations among easyCBM reading and math measures and their composite scores with the SB test, and (b) the classification accuracy of easyCBM in recommending intensive interventions.

Note: The demographics for the descriptive section of this report do not exactly match the demographics for the classification accuracy because of pair-wise deletion. In the descriptive report, any student with a score was counted in both the demographics and in the descriptives statistics. In the criterion validity and classification accuracy parts of the report, students had to have scores for both individual easyCBMs and the SB test to be included in the analysis.

For each of these measures, we report on fall, winter, and spring descriptive statistics, including the count (n), minimum score (min), maximum score (max), mean (average performance), standard deviation (amount of variation around the mean), and kurtosis (degree to which the performance distribution is normal). We also report the same descriptive statistics for the SB test in English Language Arts and Mathematics.

Finally, we extend our analysis from grade level reading and math measures to a composite score in each subject, so that we can document predictive and concurrent validity relations using graphic displays to regress easyCBM performance on state tests. The reason for these regression analyses using only composites is to ensure comparability across measures and grades.

In the second section, we focus on classification accuracy, or the degree to which Benchmark (BM) easyCBMs can be used to classify students at risk of learning problems

and therefore in need of intensive services. Specifically, we investigate several components of this process as required by NCII.

1. Area under the curve (AUC), presents a comparison of two ratios. First, true positive rates are calculated: Number of students who were correctly identified at risk divided by this group + false negatives (students incorrectly identified as NOT at risk). Second, false positive rates are calculated: Number of students falsely identified as ‘at risk divided by this group + true negatives (students correctly identified as NOT at risk).

2. If the AUC is perfect (1.0), high values occur with *sensitivity* (the ability of the measure to correctly identify students at risk who indeed are at risk) and *specificity* (the ability of the measure to correctly identify students NOT at risk who indeed are NOT at risk). Both values are important to ensure that students who need intensive intervention can receive it (sensitivity) and that students who do not need intensive services do not receive it (specificity). Following is a table displaying the relation between true and false positives and negatives, underlying calculations of ratios.

Table 1.

Sensitivity and Specificity in Decision Making: True and False Positives and Negatives

| | Predicted Positive | Predicted Negative |
|------------------------|---------------------------|---------------------------|
| Actual Positive | True Positive (TP) | False Negative (FN) |
| Actual Negative | False Positive (FP) | True Negative (TN) |

$$\text{Precision} = \text{TP}/(\text{TP}+\text{FP})$$

These two dimensions often reflect tradeoffs, which are often differently valued, for example, in professions other than education. Medicine may emphasize sensitivity to ensure individuals who potentially have a condition are treated, even though some individuals may receive a treatment who did not need it. In contrast, in the criminal justice system, high specificity may be emphasized to ensure no individuals are convicted of a crime they did not commit. Personnel in educational systems may value true and false negatives/positives in varying ways. Some schools may have more tolerance for false negatives because the students identified at risk are burgeoning in Tier III, and an RTI system is best configured by providing services in Tier II. In contrast, a ‘no child left behind’ perspective may prevail in which case, personnel may have more tolerance for false positives to ensure maximum services regardless of risk levels.

To operationalize this research in practice, the findings from this investigation complement and update previous research on classification accuracy that have been conducted with easyCBMs. In this research, the following findings were reported from three earlier studies using easyCBM.

An early study of Grade 1 students by Clark et al. (2011) reported on the diagnostic efficiency using logistic regression of the Fall and Winter easyCBM Math Benchmark scores on the TerraNova Math at the 25th and 40th Percentiles. Their findings showed high sensitivity and specificity with “the AUC for the ROC of each season in the good range, increasing from .83 in fall, to .85 in winter, and .89 in spring” (p. 250).

Alonzo and Anderson (2018) reported on early reading easyCBMs for students in Grade K through Grade 2 in the Fall, Winter, and Spring using various grade level measures of letter names, letter sounds, phoneme segmenting, word reading fluency, passage reading fluency, vocabulary, and multiple-choice comprehension. They reported that “with the exception of the Phoneme Segmenting measure when administered in the Fall of Kindergarten, all measures demonstrated strong classification accuracy” (abstract).

Finally, Alonzo and Anderson (2018) conducted a follow up study of an earlier easyCBM investigation and administered alternate forms of four easyCBM measures (Letter Names (LN), Letter Sounds (LS), Phoneme Segmenting (PS), and Word Reading Fluency (WRF)) to all kindergarten and first-grade students in the sample” (pages 1-2), along with the SAT-10. They reported varied results by measure and grade, but most findings were generally within good or acceptable ranges for all measures and grade levels analyzed.

In summary, in the early grades, the research established easyCBM to be a reasonable measure in screening students for risk of learning to read. This study extends this research beyond the early grades and focuses on grade levels participating in state testing programs (Grade 3 – Grade 8).

Demographics of the Total Sample

Table 2.

Frequencies for Grade by Special Education Status

| Grade | No | Yes |
|-------|------|-----|
| 3 | 1178 | 326 |
| 4 | 1171 | 259 |
| 5 | 1221 | 255 |
| 6 | 1052 | 178 |
| 7 | 1078 | 189 |
| 8 | 1105 | 181 |
| NA | 214 | 87 |

Table 3.

Frequencies for Grade by Gender

| Grade | Female | Male | NA |
|-------|--------|------|----|
| 3 | 713 | 790 | 1 |
| 4 | 689 | 741 | NA |
| 5 | 714 | 759 | 3 |
| 6 | 578 | 651 | 1 |
| 7 | 598 | 665 | 4 |
| 8 | 599 | 676 | 11 |
| NA | 144 | 156 | 1 |

Table 4.
Frequencies for Grade by Race

| Grade | AABlack | AIAN | Asian | Hisp | NHPI | TwoM | White |
|-------|---------|------|-------|------|------|------|-------|
| 3 | 114 | 23 | 101 | 23 | 41 | 255 | 947 |
| 4 | 119 | 34 | 81 | 35 | 32 | 270 | 859 |
| 5 | 139 | 18 | 83 | 19 | 49 | 253 | 915 |
| 6 | 116 | 11 | 87 | NA | 37 | 236 | 743 |
| 7 | 125 | 21 | 96 | NA | 32 | 238 | 755 |
| 8 | 110 | 20 | 102 | NA | 50 | 256 | 748 |
| NA | 28 | 9 | 10 | NA | 12 | 54 | 188 |

Key: AABlack = African American-Black / AIAN = American Indian-Alaska Native / Asian = Asian / Hisp = Hispanic-Latino / NHPI = Native Hawaiian-Pacific Islander / TwoM = Two or more races / White = White

Table 5.
Frequencies for Grade by English Learner Status

| Grade | No | Yes |
|-------|------|-----|
| 3 | 1386 | 118 |
| 4 | 1338 | 92 |
| 5 | 1397 | 79 |
| 6 | 1160 | 70 |
| 7 | 1203 | 64 |
| 8 | 1239 | 47 |
| NA | 283 | 18 |

Table 6.
Frequencies for Grade by Ethnicity

| Grade | Hispanic/Latino | Not Hispanic/Latino |
|-------|-----------------|---------------------|
| 3 | 311 | 1193 |
| 4 | 313 | 1117 |
| 5 | 324 | 1152 |
| 6 | 273 | 957 |
| 7 | 273 | 994 |
| 8 | 283 | 1003 |
| NA | 61 | 240 |

Descriptive Statistics of the Total Sample

Overview

All research conducted in schools needs to report on the basic descriptive statistics so that reviewers can analyze the values to determine their accuracy and possible comparability to both other research as well as values in school settings. In this section, we present tables with the results summarized by grade level with the following key for columns: the number of students (N), the minimum score (Min), the maximum score (Max), the average (Mean), standard deviation (SD), and distribution (Kurtosis). As noted earlier, the student samples in this section of the report had to have taken the only measure in the table, with no requirement that they had taken other measures (either easyCBMs or the SB test).

CBM Proficient Reading

The table below presents, for each grade (3-8), descriptive statistics for Fall (F), Winter (W), and Spring (S) Benchmark measures. Note: CBMF_readP=Fall Proficient Reading, CBMW_readP=Winter Proficient Reading, CBMS_readP=Spring Proficient Reading.

Table 7.
easyCBM Proficient Reading Statistics (by Season and Grade)

| Measure-Season | Grade | N | Min | Max | Mean | SD | Kurtosis |
|----------------|-------|------|-----|-----|-------|------|----------|
| CBMF_readP | 3 | 1306 | 0 | 20 | 10.79 | 3.87 | -0.74 |
| CBMF_readP | 4 | 1231 | 0 | 20 | 12.33 | 4.29 | -0.79 |
| CBMF_readP | 5 | 1296 | 0 | 20 | 13.60 | 3.54 | 0.63 |
| CBMF_readP | 6 | 988 | 1 | 20 | 13.52 | 3.65 | 0.96 |
| CBMF_readP | 7 | 1003 | 1 | 20 | 12.63 | 3.77 | -0.29 |
| CBMF readP | 8 | 1058 | 0 | 20 | 12.81 | 3.80 | 0.21 |
| CBMW_readP | 3 | 1235 | 1 | 18 | 10.47 | 2.98 | -0.51 |
| CBMW_readP | 4 | 1165 | 2 | 20 | 13.61 | 3.62 | -0.37 |
| CBMW_readP | 5 | 1346 | 0 | 20 | 15.18 | 3.92 | 1.41 |
| CBMW_readP | 6 | 1007 | 1 | 20 | 12.67 | 3.55 | 0.20 |
| CBMW_readP | 7 | 1027 | 0 | 20 | 13.88 | 3.49 | 1.10 |
| CBMW readP | 8 | 1062 | 0 | 20 | 12.06 | 3.41 | 0.38 |
| CBMS_readP | 3 | 1389 | 0 | 20 | 12.94 | 4.20 | -0.59 |
| CBMS_readP | 4 | 1298 | 0 | 20 | 13.59 | 3.83 | -0.08 |
| CBMS_readP | 5 | 1381 | 0 | 20 | 13.82 | 3.69 | 1.37 |
| CBMS_readP | 6 | 917 | 1 | 20 | 13.16 | 3.79 | -0.01 |
| CBMS_readP | 7 | 996 | 1 | 18 | 10.97 | 3.26 | -0.13 |
| CBMS readP | 8 | 1000 | 1 | 19 | 11.78 | 3.50 | -0.09 |

easyCBM Vocabulary

The table below presents, for each grade (3-8), descriptive statistics for Fall (F), Winter (W), and Spring (S) Benchmark measures. Note: CBMF_readVoc=Fall Vocabulary, CBMW_readVoc=Winter Vocabulary, CBMS_readVoc=Spring Vocabulary.

Table 8.
CBM Vocabulary Statistics (by Season and Grade)

| Measure-Season | Grade | N | Min | Max | Mean | SD | Kurtosis |
|----------------|-------|------|-----|-----|-------|------|----------|
| CBMF_readVoc | 3 | 1318 | 0 | 20 | 14.31 | 4.60 | 0.01 |
| CBMF_readVoc | 4 | 1230 | 0 | 20 | 14.91 | 5.23 | 1.34 |
| CBMF_readVoc | 5 | 1298 | 0 | 20 | 16.02 | 3.59 | 4.35 |
| CBMF_readVoc | 6 | 975 | 1 | 20 | 17.01 | 2.87 | 5.47 |
| CBMF_readVoc | 7 | 1004 | 3 | 20 | 17.08 | 2.97 | 3.21 |
| CBMF_readVoc | 8 | 1060 | 1 | 20 | 17.16 | 2.98 | 4.03 |
| CBMW_readVoc | 3 | 1238 | 2 | 20 | 15.84 | 3.83 | 0.99 |
| CBMW_readVoc | 4 | 1164 | 2 | 20 | 16.77 | 3.25 | 2.30 |
| CBMW_readVoc | 5 | 1329 | 0 | 20 | 16.30 | 3.46 | 3.84 |
| CBMW_readVoc | 6 | 1004 | 1 | 20 | 16.70 | 3.30 | 3.66 |
| CBMW_readVoc | 7 | 1034 | 6 | 20 | 16.90 | 2.71 | 2.29 |
| CBMW_readVoc | 8 | 1075 | 2 | 20 | 17.05 | 2.75 | 4.59 |
| CBMS_readVoc | 3 | 1394 | 0 | 20 | 16.18 | 3.93 | 3.13 |
| CBMS_readVoc | 4 | 1286 | 0 | 20 | 16.16 | 4.99 | 3.66 |
| CBMS_readVoc | 5 | 1361 | 0 | 20 | 15.99 | 4.14 | 4.91 |
| CBMS_readVoc | 6 | 920 | 1 | 20 | 17.36 | 2.79 | 5.11 |
| CBMS_readVoc | 7 | 1010 | 3 | 20 | 16.67 | 2.97 | 2.06 |
| CBMS_readVoc | 8 | 1013 | 1 | 20 | 17.57 | 3.03 | 5.18 |

easyCBM Oral Passage Reading Fluency

The table below presents, for each grade (3-8), descriptive statistics for Fall (F), Winter (W), and Spring (S) Benchmark measures. Note: CBMF_readORF=Fall Oral Passage Reading Fluency, CBMW_readORF=Winter Oral Passage Reading Fluency, CBMS_readORF=Spring Oral Passage Reading Fluency.

Table 9.
CBM Oral Passage Reading Statistics (by Season and Grade)

| Measure-Season | Grade | N | Min | Max | Mean | SD | Kurtosis |
|----------------|-------|------|-----|-----|--------|-------|----------|
| CBMF_readORF | 3 | 1393 | 1 | 218 | 81.10 | 43.17 | -0.43 |
| CBMF_readORF | 4 | 1309 | 0 | 246 | 107.71 | 42.24 | 0.18 |
| CBMF_readORF | 5 | 1369 | 1 | 262 | 143.33 | 49.76 | 0.42 |
| CBMF_readORF | 6 | 671 | 30 | 271 | 150.23 | 37.09 | 0.37 |
| CBMF_readORF | 7 | 760 | 18 | 304 | 156.42 | 35.11 | 0.85 |
| CBMF_readORF | 8 | 728 | 4 | 295 | 170.38 | 39.01 | 1.01 |
| CBMW_readORF | 3 | 1243 | 1 | 260 | 115.17 | 47.35 | -0.20 |
| CBMW_readORF | 4 | 1166 | 3 | 255 | 132.40 | 41.94 | 0.96 |
| CBMW_readORF | 5 | 1419 | 1 | 281 | 149.03 | 51.57 | 0.44 |

Continued on next page.

| Measure-Season | Grade | N | Min | Max | Mean | SD | Kurtosis |
|----------------|-------|------|-----|-----|--------|-------|----------|
| CBMW_readORF | 6 | 823 | 9 | 269 | 163.26 | 36.64 | 0.46 |
| CBMW_readORF | 7 | 806 | 37 | 279 | 172.76 | 39.27 | -0.09 |
| CBMW_readORF | 8 | 803 | 24 | 266 | 162.17 | 39.86 | 0.15 |
| CBMS_readORF | 3 | 1470 | 0 | 254 | 105.43 | 49.43 | -0.32 |
| CBMS_readORF | 4 | 1386 | 1 | 256 | 131.69 | 50.49 | 0.00 |
| CBMS_readORF | 5 | 1436 | 1 | 309 | 160.06 | 52.59 | 0.76 |
| CBMS_readORF | 6 | 382 | 12 | 283 | 165.94 | 41.51 | 0.12 |
| CBMS_readORF | 7 | 476 | 32 | 285 | 161.66 | 42.12 | -0.14 |
| CBMS_readORF | 8 | 688 | 14 | 302 | 163.69 | 37.18 | 0.86 |

CBM Math

The table below presents, for each grade (3-8), descriptive statistics for Fall (F), Winter (W), and Spring (S) Benchmark measures. Note: CBMF_math=Fall Math Performance, CBMW_math=Winter Math Performance, CBMS_math=Spring Math Performance.

Table 10.
easyCBM Math Statistics (by Season and Grade)

| Measure-Season | Grade | N | Min | Max | Mean | SD | Kurtosis |
|----------------|-------|------|-----|-----|-------|------|----------|
| CBMF_math | 3 | 1207 | 9 | 39 | 24.52 | 5.23 | -0.04 |
| CBMF_math | 4 | 1138 | 8 | 40 | 25.49 | 6.96 | -0.76 |
| CBMF_math | 5 | 1203 | 1 | 39 | 24.52 | 6.29 | -0.54 |
| CBMF_math | 6 | 980 | 1 | 44 | 23.23 | 7.32 | -0.03 |
| CBMF_math | 7 | 1049 | 2 | 41 | 21.27 | 6.52 | 0.11 |
| CBMF_math | 8 | 1025 | 1 | 45 | 22.92 | 7.95 | -0.21 |
| CBMW_math | 3 | 1242 | 10 | 40 | 28.76 | 5.64 | -0.07 |
| CBMW_math | 4 | 1174 | 7 | 40 | 27.45 | 6.16 | -0.25 |
| CBMW_math | 5 | 1238 | 8 | 40 | 27.18 | 6.53 | -0.58 |
| CBMW_math | 6 | 934 | 1 | 45 | 25.78 | 7.71 | -0.16 |
| CBMW_math | 7 | 1051 | 1 | 45 | 25.04 | 8.67 | -0.57 |
| CBMW_math | 8 | 1052 | 1 | 45 | 27.17 | 8.25 | -0.55 |
| CBMS_math | 3 | 1274 | 10 | 40 | 31.82 | 5.46 | 1.29 |
| CBMS_math | 4 | 1199 | 7 | 40 | 29.80 | 6.74 | 0.15 |
| CBMS_math | 5 | 1253 | 8 | 40 | 27.50 | 7.15 | -0.56 |
| CBMS_math | 6 | 1022 | 1 | 45 | 26.62 | 8.26 | -0.50 |
| CBMS_math | 7 | 1047 | 1 | 45 | 25.31 | 9.22 | -0.53 |
| CBMS_math | 8 | 961 | 1 | 45 | 29.62 | 8.69 | -0.54 |

ELA State Test Performance

The table below presents, for each grade (3-8), descriptive statistics for the Spring English Language Arts Test from Smarter Balanced (SB) test.

Table 11.*Spring English Language Arts SB test Statistics by Grade*

| Grade | N | Min | Max | Mean | SD | Kurtosis |
|-------|------|------|------|---------|--------|----------|
| 3 | 1479 | 2126 | 2678 | 2412.84 | 95.71 | -0.24 |
| 4 | 1409 | 2049 | 2739 | 2476.82 | 104.37 | 0.28 |
| 5 | 1423 | 2056 | 2807 | 2503.08 | 105.48 | 0.28 |
| 6 | 1205 | 2142 | 2780 | 2511.80 | 102.11 | -0.33 |
| 7 | 1236 | 2192 | 2808 | 2547.79 | 101.81 | -0.20 |
| 8 | 1253 | 2110 | 2863 | 2576.32 | 105.50 | 0.29 |

Math State Test Performance

The table below presents, for each grade (3-8), descriptive statistics for the Spring Math Test from Smarter Balanced (SB) test.

Table 12.*Spring Math SB test Statistics by Grade*

| Grade | N | Min | Max | Mean | SD | Kurtosis |
|-------|------|------|------|---------|--------|----------|
| 3 | 1298 | 2076 | 2705 | 2439.88 | 84.92 | 0.08 |
| 4 | 1241 | 2090 | 2797 | 2487.96 | 88.64 | 0.69 |
| 5 | 1285 | 2095 | 2797 | 2504.87 | 95.27 | 0.49 |
| 6 | 1213 | 2103 | 2841 | 2503.03 | 112.45 | 0.42 |
| 7 | 1250 | 2108 | 2818 | 2523.55 | 114.11 | -0.11 |
| 8 | 1260 | 2113 | 2905 | 2540.93 | 119.57 | 0.33 |

Reading Composite

Because we had three different reading measures, all with their own scale, students' performance had to be converted to a standard scale. We use z-score transformations for each measure by calculating the grade level mean and subtracting it from each student's score. That means, if the student was below the mean, they would receive a negative score (to -3.0) and if it was above the mean, they would receive a positive score (to 3.0). This comparison (difference) was divided by the standard deviation for each grade level measures. Once these individual measures were converted, they averaged.

Table 13.*Fall Reading Composite Statistics by Grade*

| Grade | N | Min | Max | Mean | SD | Kurtosis |
|-------|------|-------|------|------|------|----------|
| 3 | 1280 | -2.38 | 2.08 | 0.04 | 0.86 | -0.72 |
| 4 | 1208 | -2.76 | 1.93 | 0.04 | 0.81 | -0.42 |
| 5 | 1245 | -3.57 | 1.6 | 0.05 | 0.8 | 1.29 |
| 6 | 628 | -2.82 | 1.56 | 0.06 | 0.78 | 1.41 |
| 7 | 714 | -3.15 | 1.84 | 0.04 | 0.79 | 0.62 |
| 8 | 680 | -3.07 | 1.57 | 0.01 | 0.8 | 0.52 |

Table 14.
Winter Reading Composite Statistics by Grade

| Grade | N | Min | Max | Mean | SD | Kurtosis |
|-------|------|-------|------|------|------|----------|
| 3 | 1226 | -2.5 | 1.91 | 0.01 | 0.85 | -0.16 |
| 4 | 1150 | -2.85 | 1.74 | 0.01 | 0.85 | 0.68 |
| 5 | 1285 | -3.66 | 1.45 | 0.06 | 0.81 | 2.1 |
| 6 | 771 | -2.86 | 1.61 | 0.06 | 0.77 | 1.1 |
| 7 | 750 | -3.03 | 1.56 | 0.04 | 0.77 | 0.76 |
| 8 | 746 | -2.96 | 1.64 | 0.02 | 0.75 | 0.7 |

Table 15.
Spring Reading Composite Statistics by Grade

| Grade | N | Min | Max | Mean | SD | Kurtosis |
|-------|------|-------|------|------|------|----------|
| 3 | 1361 | -2.87 | 1.79 | 0.05 | 0.83 | 0.31 |
| 4 | 1264 | -3.07 | 1.46 | 0.05 | 0.77 | 0.23 |
| 5 | 1315 | -3.07 | 1.49 | 0.05 | 0.78 | 1.6 |
| 6 | 315 | -3.08 | 1.5 | 0.11 | 0.86 | 1.57 |
| 7 | 422 | -2.74 | 1.86 | 0.03 | 0.82 | 0.17 |
| 8 | 598 | -3.06 | 1.91 | 0.05 | 0.77 | 1.23 |

Math easyCBM Composites (across grades)

An easyCBM Math composite was calculated in a similar manner to that used with all the reading measures. Whereas the reading measures required a z-score to allow a composite score to be calculated across different measures, each with their own scale, in mathematics, only one type of Benchmark measure (BM) was used. However, to allow comparisons across the grades in a uniform correlation with the criterion measure at all three time periods, a z-score is necessary. In this way, each student's score is compared to the mean of that grade level (taking the difference) and dividing it by the standard deviation for that same grade level. We followed four steps in creating the composite: (a) calculated the mean and standard deviation for each measure by grade level, (b) calculated the z-scores for each measure and grade level student, and (c) averaged the z-score within and across grades.

Table 16.
Fall Math Composite Statistics by Grade

| Grade | N | Min | Max | Mean | SD | Kurtosis |
|-------|------|-------|------|------|----|----------|
| 3 | 1203 | -2.97 | 2.77 | 0 | 1 | -0.03 |
| 4 | 1134 | -2.51 | 2.09 | 0 | 1 | -0.76 |
| 5 | 1196 | -3.74 | 2.3 | 0 | 1 | -0.54 |
| 6 | 967 | -3.04 | 2.84 | 0 | 1 | -0.01 |
| 7 | 1033 | -2.96 | 3.03 | 0.01 | 1 | 0.14 |
| 8 | 1003 | -2.76 | 2.78 | 0.01 | 1 | -0.21 |

Table 17.
Winter Math Composite Statistics by Grade

| Grade | N | Min | Max | Mean | SD | Kurtosis |
|-------|------|-------|------|------|----|----------|
| 3 | 1239 | -3.33 | 1.99 | 0 | 1 | -0.07 |
| 4 | 1173 | -3.32 | 2.04 | 0 | 1 | -0.25 |
| 5 | 1234 | -2.94 | 1.96 | 0 | 1 | -0.58 |
| 6 | 921 | -3.21 | 2.49 | 0 | 1 | -0.23 |
| 7 | 1039 | -2.77 | 2.3 | 0.01 | 1 | -0.58 |
| 8 | 1032 | -3.17 | 2.16 | 0.01 | 1 | -0.53 |

Table 18.
Spring Math Composite Statistics by Grade

| Grade | N | Min | Max | Mean | SD | Kurtosis |
|-------|------|-------|------|------|------|----------|
| 3 | 1269 | -4 | 1.5 | 0 | 0.99 | 1.28 |
| 4 | 1198 | -3.38 | 1.51 | 0 | 1 | 0.17 |
| 5 | 1250 | -2.73 | 1.75 | 0 | 1 | -0.56 |
| 6 | 1011 | -3.1 | 2.23 | 0.01 | 1 | -0.5 |
| 7 | 1037 | -2.64 | 2.13 | 0.01 | 1 | -0.51 |
| 8 | 949 | -3.29 | 1.77 | 0.01 | 1 | -0.53 |

CBM Measures – Predictive and Concurrent Validity

Table 19.

*Correlations Among Grade **Three** easyCBM Raw Scores and SB*

| FALL | ReadORF | ReadVoc | Math | SB | ELA | SB | MTH |
|----------|---------|---------|------|----|-------------|----|-------------|
| ReadProf | 0.60 | 0.64 | 0.48 | | 0.63 | | 0.53 |
| ReadORF | | 0.72 | 0.47 | | 0.65 | | 0.58 |
| ReadVoc | | | 0.47 | | 0.64 | | 0.57 |
| Math | | | | | 0.59 | | 0.69 |
| SB ELA | | | | | | | 0.76 |
| WINTER | ReadORF | ReadVoc | Math | SB | ELA | SB | MTH |
| ReadProf | 0.54 | 0.56 | 0.48 | | 0.60 | | 0.53 |
| ReadORF | | 0.68 | 0.55 | | 0.66 | | 0.61 |
| ReadVoc | | | 0.57 | | 0.69 | | 0.61 |
| Math | | | | | 0.65 | | 0.77 |
| SB ELA | | | | | | | 0.76 |
| SPRING | ReadORF | ReadVoc | Math | SB | ELA | SB | MTH |
| ReadProf | 0.55 | 0.60 | 0.53 | | 0.69 | | 0.59 |
| ReadORF | | 0.66 | 0.57 | | 0.65 | | 0.60 |
| ReadVoc | | | 0.64 | | 0.68 | | 0.61 |
| Math | | | | | 0.66 | | 0.78 |
| SB ELA | | | | | | | 0.76 |

Table 20.

*Correlations Among Grade **Four** easyCBM Raw Scores and SB*

| FALL | ReadORF | ReadVoc | Math | SB | ELA | SB | MTH |
|----------|---------|---------|------|----|-------------|----|-------------|
| ReadProf | 0.61 | 0.69 | 0.58 | | 0.70 | | 0.59 |
| ReadORF | | 0.67 | 0.53 | | 0.65 | | 0.56 |
| ReadVoc | | | 0.60 | | 0.67 | | 0.61 |
| Math | | | | | 0.67 | | 0.80 |
| SB ELA | | | | | | | 0.76 |
| WINTER | ReadORF | ReadVoc | Math | SB | ELA | SB | MTH |
| ReadProf | 0.57 | 0.63 | 0.51 | | 0.68 | | 0.60 |
| ReadORF | | 0.65 | 0.48 | | 0.63 | | 0.54 |
| ReadVoc | | | 0.55 | | 0.67 | | 0.62 |
| Math | | | | | 0.67 | | 0.80 |
| SB ELA | | | | | | | 0.76 |

Continued on next page.

| SPRING | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
|----------|---------|---------|------|-------------|-------------|
| ReadProf | 0.52 | 0.64 | 0.59 | 0.69 | 0.60 |
| ReadORF | | 0.61 | 0.55 | 0.64 | 0.55 |
| ReadVoc | | | 0.60 | 0.67 | 0.62 |
| Math | | | | 0.71 | 0.84 |
| SB ELA | | | | | 0.76 |

Table 21.*Correlations Among Grade Five easyCBM Raw Scores and SB*

| FALL | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
|----------|---------|---------|------|-------------|-------------|
| ReadProf | 0.52 | 0.63 | 0.46 | 0.62 | 0.54 |
| ReadORF | | 0.64 | 0.48 | 0.63 | 0.51 |
| ReadVoc | | | 0.52 | 0.66 | 0.57 |
| Math | | | | 0.66 | 0.77 |
| SB ELA | | | | | 0.76 |
| WINTER | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
| ReadProf | 0.55 | 0.62 | 0.58 | 0.65 | 0.58 |
| ReadORF | | 0.62 | 0.53 | 0.62 | 0.51 |
| ReadVoc | | | 0.60 | 0.66 | 0.59 |
| Math | | | | 0.70 | 0.82 |
| SB ELA | | | | | 0.76 |
| SPRING | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
| ReadProf | 0.55 | 0.63 | 0.57 | 0.66 | 0.58 |
| ReadORF | | 0.56 | 0.53 | 0.61 | 0.53 |
| ReadVoc | | | 0.55 | 0.64 | 0.58 |
| Math | | | | 0.74 | 0.84 |
| SB ELA | | | | | 0.75 |

Table 22.*Correlations Among Grade Six easyCBM Raw Scores and SB*

| FALL | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
|----------|---------|---------|------|-------------|-------------|
| ReadProf | 0.41 | 0.56 | 0.38 | 0.56 | 0.48 |
| ReadORF | | 0.45 | 0.31 | 0.48 | 0.37 |
| ReadVoc | | | 0.45 | 0.62 | 0.51 |
| Math | | | | 0.64 | 0.74 |
| SB ELA | | | | | 0.76 |

Continued on next page.

| WINTER | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
|----------|---------|---------|------|-------------|-------------|
| ReadProf | 0.43 | 0.55 | 0.43 | 0.54 | 0.51 |
| ReadORF | | 0.47 | 0.37 | 0.51 | 0.40 |
| ReadVoc | | | 0.50 | 0.58 | 0.56 |
| Math | | | | 0.62 | 0.74 |
| SB ELA | | | | | 0.73 |
| SPRING | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
| ReadProf | 0.58 | 0.66 | 0.54 | 0.68 | 0.60 |
| ReadORF | | 0.59 | 0.50 | 0.64 | 0.56 |
| ReadVoc | | | 0.49 | 0.66 | 0.57 |
| Math | | | | 0.75 | 0.88 |
| SB ELA | | | | | 0.81 |

Table 23.*Correlations Among Grade Seven easyCBM Raw Scores and SB*

| FALL | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
|----------|---------|---------|------|-------------|-------------|
| ReadProf | 0.39 | 0.58 | 0.47 | 0.63 | 0.54 |
| ReadORF | | 0.45 | 0.32 | 0.48 | 0.39 |
| ReadVoc | | | 0.42 | 0.58 | 0.53 |
| Math | | | | 0.59 | 0.74 |
| SB ELA | | | | | 0.71 |
| WINTER | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
| ReadProf | 0.39 | 0.53 | 0.51 | 0.60 | 0.53 |
| ReadORF | | 0.44 | 0.39 | 0.49 | 0.39 |
| ReadVoc | | | 0.49 | 0.59 | 0.55 |
| Math | | | | 0.66 | 0.79 |
| SB ELA | | | | | 0.72 |
| SPRING | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
| ReadProf | 0.46 | 0.48 | 0.46 | 0.59 | 0.51 |
| ReadORF | | 0.54 | 0.39 | 0.56 | 0.44 |
| ReadVoc | | | 0.55 | 0.62 | 0.61 |
| Math | | | | 0.73 | 0.86 |
| SB ELA | | | | | 0.76 |

Table 24.*Correlations Among Grade Eight easyCBM Raw Scores and SB*

| FALL | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
|----------|---------|---------|------|-------------|-------------|
| ReadProf | 0.42 | 0.51 | 0.40 | 0.53 | 0.41 |
| ReadORF | | 0.53 | 0.42 | 0.56 | 0.42 |
| ReadVoc | | | 0.49 | 0.63 | 0.54 |
| Math | | | | 0.68 | 0.79 |
| SB ELA | | | | | 0.74 |
| WINTER | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
| ReadProf | 0.34 | 0.44 | 0.46 | 0.54 | 0.47 |
| ReadORF | | 0.45 | 0.43 | 0.53 | 0.42 |
| ReadVoc | | | 0.56 | 0.64 | 0.57 |
| Math | | | | 0.66 | 0.80 |
| SB ELA | | | | | 0.72 |
| SPRING | ReadORF | ReadVoc | Math | SB ELA | SB MTH |
| ReadProf | 0.43 | 0.52 | 0.43 | 0.58 | 0.44 |
| ReadORF | | 0.45 | 0.40 | 0.59 | 0.44 |
| ReadVoc | | | 0.54 | 0.64 | 0.53 |
| Math | | | | 0.70 | 0.86 |
| SB ELA | | | | | 0.75 |

CBM Composite Measures – Predictive and Concurrent Validity Coefficients

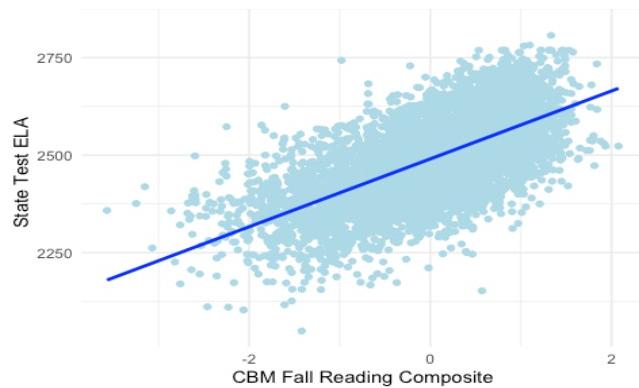
| | |
|--|-----|
| Fall Reading correlation with the ELA state test | .64 |
| Winter Reading correlation with the ELA state test | .57 |
| Spring Reading correlation with the ELA state test | .66 |
| Fall Math correlation with the Math state test | .57 |
| Winter Math correlation with the Math state test | .59 |
| Spring Math correlation with the Math state test | .61 |

CBM Composite Scores Regressed on ELA State Test Performance

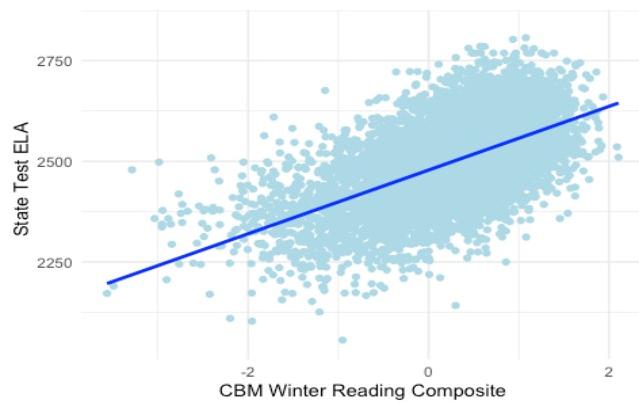
Next, we present plot distributions for easyCBM Reading and Math Composite Performance and State SB Test Performance displaying their concurrent distributions. In these plots, the CBM performance is displayed along the x-axis and the SB performance is displayed along the y-axis. Note that all CBMs used the composite scores because we are collapsing across measures and grades. For each plot, we ran a regression line (in blue) that summarizes this concurrent distribution.

Figure 1

Regression of CBM Fall Reading Composite on SB

**Figure 2**

Regression of CBM Winter Reading Composite on SB

**Figure 3**

Regression of CBM Spring Reading Composite on SB

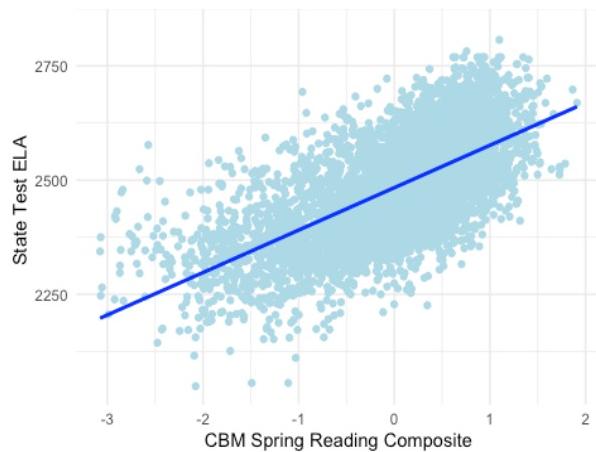


Figure 4
Regression of CBM Fall Math Composite on SB

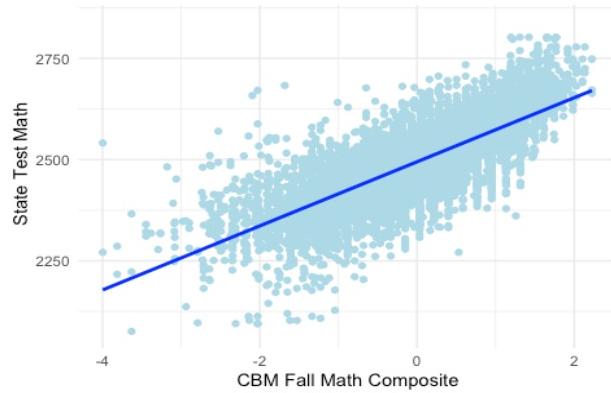


Figure 5
Regression of CBM Winter Math Composite on SB

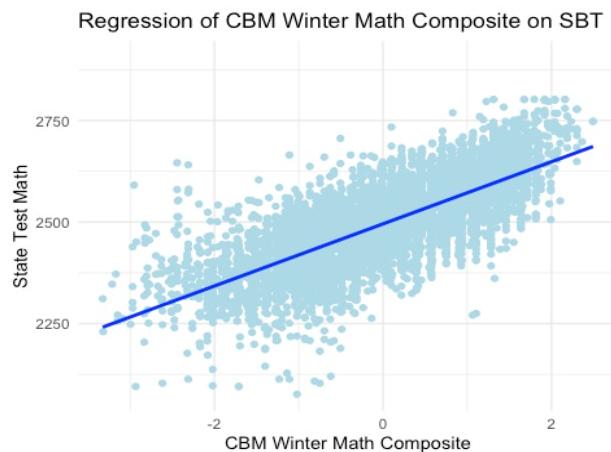
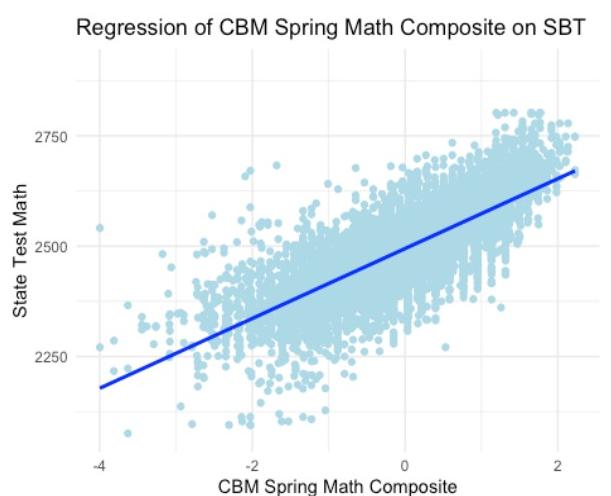


Figure 6
Regression of CBM Spring Math Composite on SB



Classification Accuracy: Evidence, Summary, and Demographics

The Classification Accuracy (CA) analysis presents important information on the use of easyCBMs to classify students with disabilities for all the reading and math measures in Grades 3 to 8. In that document, information is provided on (a) the percentile rank (PR) used in this classification (for most measures and grade, the 20th PR is optimal), (b) accuracy, including base rates, and (c) receiver operating characteristics with attention to area under the curve (AUC) and true/false positives and negatives.

In this section, we present three tables for each season/test displaying classification accuracy values reflecting (a) evidence, (b) summary (statistics), and (c) demographics. The rows with gray highlight show values required by NCII. Bold values reflect convincing evidence, non-bold reflects partially convincing evidence, and red font reflect unconvincing evidence.

Table 25.
Classification Accuracy Fall 2023: Proficient Reading CBM with SB

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2342 | 2378 | 2411 | 2432 | 2456 | 2468 |
| Cut Points - Corresponding performance score (numeric) on screener measure | 10 | 11 | 13 | 13 | 13 | 12 |
| Classification Data - True Positive (a) | 713 | 760 | 831 | 625 | 541 | 659 |
| Classification Data - False Positive (b) | 67 | 39 | 57 | 59 | 34 | 41 |
| Classification Data - False Negative (c) | 299 | 255 | 214 | 130 | 251 | 223 |
| Classification Data - True Negative (d) | 217 | 169 | 159 | 154 | 161 | 112 |
| Area Under the Curve (AUC) | 0.80 | 0.85 | 0.83 | 0.83 | 0.83 | 0.80 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.80 | 0.85 | 0.83 | 0.83 | 0.83 | 0.80 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.81 | 0.85 | 0.83 | 0.83 | 0.83 | 0.80 |

Table 26.*Classification Accuracy Summary Fall 2023: Proficient Reading CBM with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1296 | 1223 | 1261 | 968 | 987 | 1035 |
| Base Rate | 0.22 | 0.17 | 0.17 | 0.22 | 0.20 | 0.15 |
| Overall Classification Rate | 0.72 | 0.76 | 0.79 | 0.80 | 0.71 | 0.74 |
| Sensitivity | 0.70 | 0.75 | 0.80 | 0.83 | 0.68 | 0.75 |
| Specificity | 0.76 | 0.81 | 0.74 | 0.72 | 0.83 | 0.73 |
| False Positive Rate | 0.24 | 0.19 | 0.26 | 0.28 | 0.17 | 0.27 |
| False Negative Rate | 0.30 | 0.25 | 0.20 | 0.17 | 0.32 | 0.25 |
| Positive Predictive Power | 0.91 | 0.95 | 0.94 | 0.91 | 0.94 | 0.94 |
| Negative Predictive Power | 0.42 | 0.40 | 0.43 | 0.54 | 0.39 | 0.33 |

Table 27.*Classification Accuracy Demographics Fall 2023: Proficient Reading CBM with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 678 | 637 | 651 | 506 | 520 | 556 |
| Female | 618 | 586 | 607 | 461 | 466 | 470 |
| Gender Unknown | 13 | 22 | 15 | 1 | 1 | 9 |
| American Indian/Alaska Native | 17 | 29 | 15 | 9 | 14 | 17 |
| Asian/Pacific Islander | 90 | 70 | 78 | 66 | 77 | 81 |
| Black | 97 | 100 | 118 | 81 | 93 | 92 |
| Multi-Racial | 229 | 241 | 222 | 181 | 183 | 202 |
| Native Hawaiian/Pacific Islander | 35 | 28 | 45 | 33 | 24 | 42 |
| White | 815 | 733 | 771 | 598 | 596 | 601 |
| Hispanic/Latino | 267 | 276 | 279 | 207 | 220 | 230 |
| Not Hispanic/Latino | 1029 | 947 | 982 | 761 | 767 | 805 |
| IEP or diagnosed disability | 270 | 214 | 215 | 140 | 153 | 154 |
| English Language Learner | 105 | 79 | 67 | 55 | 52 | 41 |

Table 28.*Classification Accuracy Fall 2023: Oral Reading Fluency CBM with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|---------|---------|---------|---------|---------|---------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2342 | 2378 | 2411 | 2432 | 2456 | 2468 |
| Cut Points - Corresponding performance score (numeric) on screener measure | 66 | 90 | 129 | 134 | 151 | 148 |
| Classification Data - True Positive (a) | 819 | 862 | 844 | 411 | 367 | 472 |
| Classification Data - False Positive (b) | 63 | 63 | 65 | 42 | 35 | 49 |
| Classification Data - False Negative (c) | 244 | 202 | 237 | 102 | 222 | 113 |

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|---|-------------|-------------|-------------|-------------|---------|-------------|
| Classification Data - True Negative (d) | 250 | 163 | 175 | 102 | 115 | 73 |
| Area Under the Curve (AUC) | 0.85 | 0.84 | 0.81 | 0.82 | 0.77 | 0.75 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.85 | 0.84 | 0.81 | 0.82 | 0.77 | 0.75 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.85 | 0.84 | 0.82 | 0.82 | 0.77 | 0.75 |

Table 29.*Classification Accuracy Summary Fall 2023: Oral Reading Fluency CBM with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1376 | 1290 | 1321 | 657 | 739 | 707 |
| Base Rate | 0.23 | 0.18 | 0.18 | 0.22 | 0.20 | 0.17 |
| Overall Classification Rate | 0.78 | 0.79 | 0.77 | 0.78 | 0.65 | 0.77 |
| Sensitivity | 0.77 | 0.81 | 0.78 | 0.80 | 0.62 | 0.81 |
| Specificity | 0.80 | 0.72 | 0.73 | 0.71 | 0.77 | 0.60 |
| False Positive Rate | 0.20 | 0.28 | 0.27 | 0.29 | 0.23 | 0.40 |
| False Negative Rate | 0.23 | 0.19 | 0.22 | 0.20 | 0.38 | 0.19 |
| Positive Predictive Power | 0.93 | 0.93 | 0.93 | 0.91 | 0.91 | 0.91 |
| Negative Predictive Power | 0.51 | 0.45 | 0.42 | 0.50 | 0.34 | 0.39 |

Table 30.*Classification Accuracy Demographics: Oral Reading Fluency CBM with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 716 | 670 | 678 | 350 | 402 | 388 |
| Female | 660 | 620 | 640 | 306 | 336 | 314 |
| Gender Unknown | 20 | 34 | 21 | 1 | 1 | 5 |
| American Indian/Alaska Native | 18 | 29 | 16 | 7 | 9 | 10 |
| Asian/Pacific Islander | 92 | 70 | 77 | 42 | 57 | 60 |
| Black | 101 | 101 | 118 | 52 | 65 | 64 |
| Multi-Racial | 236 | 246 | 225 | 112 | 125 | 117 |
| Native Hawaiian/Pacific Islander | 36 | 28 | 45 | 21 | 18 | 28 |
| White | 873 | 782 | 822 | 423 | 465 | 428 |
| Hispanic/Latino | 279 | 289 | 286 | 139 | 161 | 153 |
| Not Hispanic/Latino | 1097 | 1001 | 1035 | 518 | 578 | 554 |
| IEP or diagnosed disability | 293 | 223 | 223 | 96 | 106 | 124 |
| English Language Learner | 106 | 83 | 68 | 38 | 40 | 30 |

Table 31.*Classification Accuracy Fall 2023: Vocabulary CBM with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2342 | 2378 | 2411 | 2432 | 2456 | 2468 |
| Cut Points - Corresponding performance score (numeric) on screener measure | 14 | 15 | 16 | 17 | 17 | 17 |
| Classification Data - True Positive (a) | 799 | 787 | 809 | 610 | 632 | 695 |
| Classification Data - False Positive (b) | 74 | 36 | 52 | 70 | 61 | 40 |
| Classification Data - False Negative (c) | 212 | 228 | 232 | 138 | 158 | 186 |
| Classification Data - True Negative (d) | 223 | 173 | 168 | 140 | 135 | 117 |
| Area Under the Curve (AUC) | 0.83 | 0.84 | 0.84 | 0.82 | 0.81 | 0.84 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.83 | 0.84 | 0.84 | 0.81 | 0.81 | 0.83 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.83 | 0.84 | 0.84 | 0.82 | 0.81 | 0.84 |

Table 32.*Classification Accuracy Summary Fall 2023: Vocabulary CBM with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1308 | 1224 | 1261 | 958 | 986 | 1038 |
| Base Rate | 0.23 | 0.17 | 0.17 | 0.22 | 0.20 | 0.15 |
| Overall Classification Rate | 0.78 | 0.78 | 0.77 | 0.78 | 0.78 | 0.78 |
| Sensitivity | 0.79 | 0.78 | 0.78 | 0.82 | 0.80 | 0.79 |
| Specificity | 0.75 | 0.83 | 0.76 | 0.67 | 0.69 | 0.75 |
| False Positive Rate | 0.25 | 0.17 | 0.24 | 0.33 | 0.31 | 0.25 |
| False Negative Rate | 0.21 | 0.22 | 0.22 | 0.18 | 0.20 | 0.21 |
| Positive Predictive Power | 0.92 | 0.96 | 0.94 | 0.90 | 0.91 | 0.95 |
| Negative Predictive Power | 0.51 | 0.43 | 0.42 | 0.50 | 0.46 | 0.39 |

Table 33.*Classification Accuracy Demographics Fall 2023: Vocabulary CBM with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 685 | 637 | 649 | 494 | 524 | 552 |
| Female | 623 | 587 | 609 | 463 | 461 | 477 |
| Gender Unknown | 14 | 20 | 14 | 1 | 1 | 9 |
| American Indian/Alaska Native | 17 | 29 | 15 | 9 | 14 | 16 |
| Asian/Pacific Islander | 91 | 70 | 78 | 65 | 77 | 86 |
| Black | 98 | 101 | 119 | 79 | 92 | 90 |
| Multi-Racial | 233 | 241 | 221 | 179 | 183 | 202 |
| Native Hawaiian/Pacific Islander | 35 | 27 | 45 | 33 | 26 | 43 |
| White | 820 | 736 | 772 | 593 | 594 | 601 |
| Hispanic/Latino | 270 | 274 | 279 | 206 | 220 | 232 |
| Not Hispanic/Latino | 1038 | 950 | 982 | 752 | 766 | 806 |
| IEP or diagnosed disability | 276 | 215 | 219 | 133 | 155 | 150 |
| English Language Learner | 106 | 79 | 68 | 51 | 52 | 42 |

Table 34.*Classification Accuracy Winter 2024: Proficient Reading CBM with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|---------|-------------|---------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2342 | 2378 | 2411 | 2432 | 2456 | 2468 |
| Cut Points - Corresponding performance score (numeric) on screener measure | 10 | 12 | 15 | 12 | 13 | 11 |
| Classification Data - True Positive (a) | 710 | 808 | 849 | 606 | 672 | 683 |
| Classification Data - False Positive (b) | 66 | 40 | 55 | 81 | 68 | 55 |
| Classification Data - False Negative (c) | 264 | 173 | 222 | 158 | 129 | 205 |
| Classification Data - True Negative (d) | 190 | 142 | 183 | 146 | 138 | 100 |
| Area Under the Curve (AUC) | 0.80 | 0.85 | 0.85 | 0.79 | 0.81 | 0.76 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.80 | 0.85 | 0.85 | 0.79 | 0.81 | 0.76 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.80 | 0.85 | 0.85 | 0.79 | 0.82 | 0.77 |

Table 35.*Classification Accuracy Summary Winter 2024: Proficient Reading CBM with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1230 | 1163 | 1309 | 991 | 1007 | 1043 |
| Base Rate | 0.21 | 0.16 | 0.18 | 0.23 | 0.20 | 0.15 |
| Overall Classification Rate | 0.73 | 0.82 | 0.79 | 0.76 | 0.80 | 0.75 |
| Sensitivity | 0.73 | 0.82 | 0.79 | 0.79 | 0.84 | 0.77 |
| Specificity | 0.74 | 0.78 | 0.77 | 0.64 | 0.67 | 0.65 |
| False Positive Rate | 0.26 | 0.22 | 0.23 | 0.36 | 0.33 | 0.35 |
| False Negative Rate | 0.27 | 0.18 | 0.21 | 0.21 | 0.16 | 0.23 |
| Positive Predictive Power | 0.91 | 0.95 | 0.94 | 0.88 | 0.91 | 0.93 |
| Negative Predictive Power | 0.42 | 0.45 | 0.45 | 0.48 | 0.52 | 0.33 |

Table 36.*Classification Accuracy Demographics Winter 2024: Proficient Reading CBM with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 641 | 601 | 671 | 524 | 533 | 553 |
| Female | 589 | 562 | 635 | 466 | 473 | 482 |
| Gender Unknown | 0 | 0 | 15 | 1 | 1 | 8 |
| American Indian/Alaska Native | 18 | 31 | 15 | 7 | 17 | 18 |
| Asian/Pacific Islander | 94 | 71 | 78 | 66 | 76 | 84 |
| Black | 103 | 109 | 126 | 89 | 97 | 86 |
| Multi-Racial | 238 | 244 | 232 | 192 | 182 | 206 |
| Native Hawaiian/Pacific Islander | 37 | 30 | 46 | 33 | 29 | 40 |
| White | 740 | 678 | 800 | 604 | 606 | 609 |
| Hispanic/Latino | 270 | 264 | 293 | 211 | 219 | 233 |
| Not Hispanic/Latino | 960 | 899 | 1016 | 780 | 788 | 810 |
| IEP or diagnosed disability | 235 | 198 | 226 | 148 | 162 | 158 |
| English Language Learner | 103 | 74 | 69 | 50 | 54 | 40 |

Table 37.*Classification Accuracy Winter 2024: Oral Reading Fluency CBM with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|---------|---------|---------|---------|---------|---------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2342 | 2378 | 2411 | 2432 | 2456 | 2468 |
| Cut Points - Corresponding performance score (numeric) on screener measure | 92 | 122 | 150 | 156 | 169 | 134 |
| Classification Data - True Positive (a) | 807 | 768 | 723 | 452 | 400 | 537 |
| Classification Data - False Positive (b) | 68 | 35 | 38 | 53 | 38 | 50 |
| Classification Data - False Negative (c) | 170 | 211 | 390 | 177 | 229 | 130 |

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|---|-------------|-------------|-------------|---------|---------|---------|
| Classification Data - True Negative (d) | 192 | 150 | 219 | 127 | 119 | 72 |
| Area Under the Curve (AUC) | 0.85 | 0.86 | 0.82 | 0.78 | 0.77 | 0.77 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.85 | 0.86 | 0.82 | 0.78 | 0.77 | 0.77 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.86 | 0.86 | 0.82 | 0.78 | 0.77 | 0.77 |

Table 38.*Classification Accuracy Summary Winter 2024: Oral Reading Fluency CBM with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1237 | 1164 | 1370 | 809 | 786 | 789 |
| Base Rate | 0.21 | 0.16 | 0.19 | 0.22 | 0.20 | 0.15 |
| Overall Classification Rate | 0.81 | 0.79 | 0.69 | 0.72 | 0.66 | 0.77 |
| Sensitivity | 0.83 | 0.78 | 0.65 | 0.72 | 0.64 | 0.81 |
| Specificity | 0.74 | 0.81 | 0.85 | 0.71 | 0.76 | 0.59 |
| False Positive Rate | 0.26 | 0.19 | 0.15 | 0.29 | 0.24 | 0.41 |
| False Negative Rate | 0.17 | 0.22 | 0.35 | 0.28 | 0.36 | 0.19 |
| Positive Predictive Power | 0.92 | 0.96 | 0.95 | 0.90 | 0.91 | 0.91 |
| Negative Predictive Power | 0.53 | 0.42 | 0.36 | 0.42 | 0.34 | 0.36 |

Table 39.*Classification Accuracy Demographics Winter 2024: Oral Reading Fluency CBM with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 645 | 606 | 702 | 433 | 417 | 428 |
| Female | 592 | 558 | 665 | 375 | 367 | 355 |
| Gender Unknown | 0 | 0 | 21 | 1 | 2 | 6 |
| American Indian/Alaska Native | 18 | 31 | 17 | 6 | 13 | 14 |
| Asian/Pacific Islander | 94 | 70 | 78 | 53 | 56 | 62 |
| Black | 103 | 109 | 126 | 65 | 68 | 58 |
| Multi-Racial | 239 | 245 | 236 | 157 | 145 | 146 |
| Native Hawaiian/Pacific Islander | 38 | 31 | 47 | 30 | 19 | 32 |
| White | 745 | 678 | 848 | 498 | 485 | 477 |
| Hispanic/Latino | 271 | 267 | 302 | 166 | 167 | 171 |
| Not Hispanic/Latino | 966 | 897 | 1068 | 643 | 619 | 618 |
| IEP or diagnosed disability | 240 | 199 | 237 | 101 | 115 | 118 |
| English Language Learner | 104 | 77 | 69 | 38 | 41 | 30 |

Table 40.*Classification Accuracy Winter 2024: Vocabulary CBM with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2342 | 2378 | 2411 | 2432 | 2456 | 2468 |
| Cut Points - Corresponding performance score (numeric) on screener measure | 15 | 17 | 16 | 17 | 17 | 17 |
| Classification Data - True Positive (a) | 829 | 748 | 865 | 579 | 607 | 711 |
| Classification Data - False Positive (b) | 66 | 23 | 57 | 48 | 70 | 35 |
| Classification Data - False Negative (c) | 146 | 229 | 200 | 180 | 194 | 185 |
| Classification Data - True Negative (d) | 191 | 162 | 174 | 180 | 144 | 122 |
| Area Under the Curve (AUC) | 0.87 | 0.89 | 0.87 | 0.85 | 0.80 | 0.85 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.87 | 0.89 | 0.87 | 0.85 | 0.80 | 0.85 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.87 | 0.89 | 0.87 | 0.85 | 0.81 | 0.85 |

Table 41.*Classification Accuracy Summary Winter 2024: Vocabulary CBM with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1232 | 1162 | 1296 | 987 | 1015 | 1053 |
| Base Rate | 0.21 | 0.16 | 0.18 | 0.23 | 0.21 | 0.15 |
| Overall Classification Rate | 0.83 | 0.78 | 0.80 | 0.77 | 0.74 | 0.79 |
| Sensitivity | 0.85 | 0.77 | 0.81 | 0.76 | 0.76 | 0.79 |
| Specificity | 0.74 | 0.88 | 0.75 | 0.79 | 0.67 | 0.78 |
| False Positive Rate | 0.26 | 0.12 | 0.25 | 0.21 | 0.33 | 0.22 |
| False Negative Rate | 0.15 | 0.23 | 0.19 | 0.24 | 0.24 | 0.21 |
| Positive Predictive Power | 0.93 | 0.97 | 0.94 | 0.92 | 0.90 | 0.95 |
| Negative Predictive Power | 0.57 | 0.41 | 0.47 | 0.50 | 0.43 | 0.40 |

Table 42.*Classification Accuracy Demographics Winter 2024: Vocabulary CBM with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 641 | 601 | 661 | 521 | 536 | 557 |
| Female | 591 | 561 | 632 | 465 | 478 | 487 |
| Gender Unknown | 0 | 0 | 14 | 1 | 1 | 9 |
| American Indian/Alaska Native | 18 | 31 | 15 | 8 | 17 | 17 |
| Asian/Pacific Islander | 93 | 71 | 78 | 66 | 76 | 84 |
| Black | 102 | 109 | 125 | 85 | 98 | 93 |
| Multi-Racial | 238 | 244 | 232 | 190 | 186 | 209 |
| Native Hawaiian/Pacific Islander | 38 | 30 | 47 | 32 | 28 | 40 |
| White | 743 | 677 | 788 | 606 | 610 | 610 |
| Hispanic/Latino | 270 | 262 | 292 | 211 | 223 | 236 |
| Not Hispanic/Latino | 962 | 900 | 1004 | 776 | 792 | 817 |
| IEP or diagnosed disability | 237 | 199 | 223 | 149 | 164 | 156 |
| English Language Learner | 103 | 73 | 68 | 51 | 54 | 40 |

Table 43.*Classification Accuracy Spring 2024: Proficient Reading CBM with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|-------------|---------|-------------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2342 | 2378 | 2411 | 2432 | 2456 | 2468 |
| Cut Points - Corresponding performance score (numeric) on screener measure | 13 | 13 | 13 | 12 | 11 | 11 |
| Classification Data - True Positive (a) | 770 | 832 | 925 | 596 | 546 | 637 |
| Classification Data - False Positive (b) | 40 | 41 | 68 | 55 | 46 | 29 |
| Classification Data - False Negative (c) | 284 | 235 | 162 | 113 | 246 | 215 |
| Classification Data - True Negative (d) | 284 | 185 | 187 | 144 | 144 | 109 |
| Area Under the Curve (AUC) | 0.85 | 0.87 | 0.85 | 0.85 | 0.78 | 0.83 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.85 | 0.86 | 0.85 | 0.85 | 0.78 | 0.82 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.86 | 0.87 | 0.85 | 0.85 | 0.78 | 0.83 |

Table 44.*Classification Accuracy Summary Spring 2024: Proficient Reading CBM with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1378 | 1293 | 1342 | 908 | 982 | 990 |
| Base Rate | 0.24 | 0.17 | 0.19 | 0.22 | 0.19 | 0.14 |
| Overall Classification Rate | 0.76 | 0.79 | 0.83 | 0.81 | 0.70 | 0.75 |
| Sensitivity | 0.73 | 0.78 | 0.85 | 0.84 | 0.69 | 0.75 |
| Specificity | 0.88 | 0.82 | 0.73 | 0.72 | 0.76 | 0.79 |
| False Positive Rate | 0.12 | 0.18 | 0.27 | 0.28 | 0.24 | 0.21 |
| False Negative Rate | 0.27 | 0.22 | 0.15 | 0.16 | 0.31 | 0.25 |
| Positive Predictive Power | 0.95 | 0.95 | 0.93 | 0.92 | 0.92 | 0.96 |
| Negative Predictive Power | 0.50 | 0.44 | 0.54 | 0.56 | 0.37 | 0.34 |

Table 45.*Classification Accuracy Demographics Spring 2024: Reading Proficiency CBM with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 721 | 663 | 686 | 482 | 513 | 534 |
| Female | 656 | 630 | 653 | 426 | 467 | 449 |
| Gender Unknown | 15 | 20 | 17 | 0 | 2 | 7 |
| American Indian/Alaska Native | 18 | 31 | 15 | 8 | 14 | 16 |
| Asian/Pacific Islander | 97 | 73 | 78 | 62 | 73 | 85 |
| Black | 106 | 115 | 131 | 79 | 102 | 86 |
| Multi-Racial | 249 | 253 | 237 | 170 | 185 | 189 |
| Native Hawaiian/Pacific Islander | 39 | 30 | 48 | 28 | 23 | 34 |
| White | 855 | 771 | 819 | 561 | 585 | 580 |
| Hispanic/Latino | 289 | 288 | 304 | 192 | 211 | 219 |
| Not Hispanic/Latino | 1089 | 1005 | 1038 | 716 | 771 | 771 |
| IEP or diagnosed disability | 293 | 229 | 229 | 133 | 143 | 155 |
| English Language Learner | 108 | 82 | 75 | 46 | 51 | 35 |

Table 46.*Classification Accuracy Spring 2024: Oral Reading Fluency CBM with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|---------|---------|---------|---------|---------|---------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2342 | 2378 | 2411 | 2432 | 2456 | 2468 |
| Cut Points - Corresponding performance score (numeric) on screener measure | 99 | 110 | 147 | 146 | 144 | 156 |
| Classification Data - True Positive (a) | 783 | 924 | 871 | 237 | 285 | 390 |
| Classification Data - False Positive (b) | 57 | 68 | 64 | 21 | 32 | 19 |
| Classification Data - False Negative (c) | 321 | 197 | 257 | 59 | 71 | 180 |

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Classification Data - True Negative (d) | 289 | 179 | 195 | 57 | 77 | 85 |
| Area Under the Curve (AUC) | 0.84 | 0.83 | 0.82 | 0.83 | 0.81 | 0.80 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.84 | 0.83 | 0.82 | 0.83 | 0.81 | 0.79 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.84 | 0.84 | 0.82 | 0.83 | 0.81 | 0.80 |

Table 47.*Classification Accuracy Summary Spring 2024: Oral Reading Fluency CBM with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1450 | 1368 | 1387 | 374 | 465 | 674 |
| Base Rate | 0.24 | 0.18 | 0.19 | 0.21 | 0.23 | 0.15 |
| Overall Classification Rate | 0.74 | 0.81 | 0.77 | 0.79 | 0.78 | 0.70 |
| Sensitivity | 0.71 | 0.82 | 0.77 | 0.80 | 0.80 | 0.68 |
| Specificity | 0.84 | 0.72 | 0.75 | 0.73 | 0.71 | 0.82 |
| False Positive Rate | 0.16 | 0.28 | 0.25 | 0.27 | 0.29 | 0.18 |
| False Negative Rate | 0.29 | 0.18 | 0.23 | 0.20 | 0.20 | 0.32 |
| Positive Predictive Power | 0.93 | 0.93 | 0.93 | 0.92 | 0.90 | 0.95 |
| Negative Predictive Power | 0.47 | 0.48 | 0.43 | 0.49 | 0.52 | 0.32 |

Table 48.*Classification Accuracy Demographics Spring 2024: Oral Reading Fluency CBM with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 757 | 702 | 711 | 195 | 251 | 372 |
| Female | 692 | 666 | 673 | 179 | 211 | 294 |
| Gender Unknown | 23 | 34 | 21 | 0 | 3 | 8 |
| American Indian/Alaska Native | 21 | 31 | 17 | 3 | 9 | 11 |
| Asian/Pacific Islander | 97 | 73 | 79 | 17 | 26 | 51 |
| Black | 109 | 115 | 130 | 23 | 34 | 63 |
| Multi-Racial | 252 | 259 | 238 | 45 | 66 | 112 |
| Native Hawaiian/Pacific Islander | 39 | 32 | 48 | 7 | 7 | 27 |
| White | 910 | 824 | 857 | 279 | 323 | 410 |
| Hispanic/Latino | 303 | 306 | 308 | 69 | 88 | 150 |
| Not Hispanic/Latino | 1147 | 1062 | 1079 | 305 | 377 | 524 |
| IEP or diagnosed disability | 309 | 248 | 230 | 68 | 88 | 103 |
| English Language Learner | 111 | 88 | 75 | 21 | 20 | 25 |

Table 49.*Classification Accuracy Spring 2024: Vocabulary CBM with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2342 | 2378 | 2411 | 2432 | 2456 | 2468 |
| Cut Points - Corresponding performance score (numeric) on screener measure | 17 | 16 | 17 | 17 | 16 | 18 |
| Classification Data - True Positive (a) | 826 | 896 | 760 | 605 | 668 | 642 |
| Classification Data - False Positive (b) | 68 | 58 | 46 | 65 | 69 | 34 |
| Classification Data - False Negative (c) | 227 | 164 | 318 | 109 | 135 | 217 |
| Classification Data - True Negative (d) | 260 | 164 | 202 | 129 | 125 | 107 |
| Area Under the Curve (AUC) | 0.87 | 0.85 | 0.82 | 0.83 | 0.82 | 0.83 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.87 | 0.85 | 0.82 | 0.83 | 0.82 | 0.83 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.87 | 0.85 | 0.82 | 0.84 | 0.82 | 0.84 |

Table 50.*Classification Accuracy Summary Spring 2024: Vocabulary CBM with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1381 | 1282 | 1326 | 908 | 997 | 1000 |
| Base Rate | 0.24 | 0.17 | 0.19 | 0.21 | 0.19 | 0.14 |
| Overall Classification Rate | 0.79 | 0.83 | 0.73 | 0.81 | 0.80 | 0.75 |
| Sensitivity | 0.78 | 0.85 | 0.71 | 0.85 | 0.83 | 0.75 |
| Specificity | 0.79 | 0.74 | 0.81 | 0.66 | 0.64 | 0.76 |
| False Positive Rate | 0.21 | 0.26 | 0.19 | 0.34 | 0.36 | 0.24 |
| False Negative Rate | 0.22 | 0.15 | 0.29 | 0.15 | 0.17 | 0.25 |
| Positive Predictive Power | 0.92 | 0.94 | 0.94 | 0.90 | 0.91 | 0.95 |
| Negative Predictive Power | 0.53 | 0.50 | 0.39 | 0.54 | 0.48 | 0.33 |

Table 51.*Classification Accuracy Demographics Spring 2024: Vocabulary CBM with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 723 | 660 | 678 | 469 | 527 | 545 |
| Female | 657 | 622 | 645 | 439 | 468 | 448 |
| Gender Unknown | 17 | 17 | 15 | 0 | 2 | 7 |
| American Indian/Alaska Native | 20 | 30 | 15 | 8 | 16 | 15 |
| Asian/Pacific Islander | 96 | 72 | 78 | 61 | 73 | 85 |
| Black | 107 | 114 | 129 | 84 | 103 | 83 |
| Multi-Racial | 250 | 253 | 236 | 172 | 187 | 188 |
| Native Hawaiian/Pacific Islander | 39 | 31 | 48 | 29 | 26 | 37 |
| White | 853 | 765 | 808 | 554 | 592 | 592 |
| Hispanic/Latino | 292 | 287 | 301 | 193 | 216 | 219 |
| Not Hispanic/Latino | 1089 | 995 | 1025 | 715 | 781 | 781 |
| IEP or diagnosed disability | 291 | 232 | 231 | 117 | 139 | 148 |
| English Language Learner | 109 | 82 | 74 | 48 | 51 | 38 |

Table 52.*Classification Accuracy Fall 2023: Math CBM with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2362 | 2397 | 2410 | 2423 | 2427 | 2434 |
| Cut Points - Corresponding performance score (numeric) on screener measure | 23 | 23 | 23 | 21 | 21 | 21 |
| Classification Data - True Positive (a) | 743 | 739 | 716 | 573 | 511 | 560 |
| Classification Data - False Positive (b) | 45 | 13 | 13 | 42 | 29 | 19 |
| Classification Data - False Negative (c) | 247 | 228 | 303 | 169 | 298 | 270 |
| Classification Data - True Negative (d) | 168 | 154 | 164 | 183 | 195 | 154 |
| Area Under the Curve (AUC) | 0.84 | 0.92 | 0.89 | 0.86 | 0.81 | 0.84 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.84 | 0.91 | 0.89 | 0.86 | 0.81 | 0.84 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.85 | 0.92 | 0.89 | 0.86 | 0.81 | 0.84 |

Table 53.*Classification Accuracy Summary Fall 2023: Math CBM with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1203 | 1134 | 1196 | 967 | 1033 | 1003 |
| Base Rate | 0.18 | 0.15 | 0.15 | 0.23 | 0.22 | 0.17 |
| Overall Classification Rate | 0.76 | 0.79 | 0.74 | 0.78 | 0.68 | 0.71 |
| Sensitivity | 0.75 | 0.76 | 0.70 | 0.77 | 0.63 | 0.67 |
| Specificity | 0.79 | 0.92 | 0.93 | 0.81 | 0.87 | 0.89 |
| False Positive Rate | 0.21 | 0.08 | 0.07 | 0.19 | 0.13 | 0.11 |
| False Negative Rate | 0.25 | 0.24 | 0.30 | 0.23 | 0.37 | 0.33 |
| Positive Predictive Power | 0.94 | 0.98 | 0.98 | 0.93 | 0.95 | 0.97 |
| Negative Predictive Power | 0.40 | 0.40 | 0.35 | 0.52 | 0.40 | 0.36 |

Table 54.*Classification Accuracy Demographics Fall 2023: Math CBM with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 630 | 592 | 615 | 484 | 536 | 523 |
| Female | 573 | 542 | 578 | 482 | 495 | 470 |
| Gender Unknown | 0 | 0 | 3 | 1 | 2 | 10 |
| American Indian/Alaska Native | 16 | 28 | 13 | 7 | 15 | 13 |
| Asian/Pacific Islander | 92 | 71 | 79 | 61 | 79 | 79 |
| Black | 101 | 101 | 122 | 87 | 100 | 83 |
| Multi-Racial | 228 | 239 | 223 | 185 | 192 | 195 |
| Native Hawaiian/Pacific Islander | 36 | 28 | 45 | 33 | 25 | 40 |
| White | 730 | 667 | 714 | 594 | 622 | 593 |
| Hispanic/Latino | 260 | 256 | 273 | 217 | 233 | 210 |
| Not Hispanic/Latino | 943 | 878 | 923 | 750 | 800 | 793 |
| IEP or diagnosed disability | 237 | 194 | 194 | 146 | 158 | 146 |
| English Language Learner | 105 | 77 | 64 | 61 | 55 | 36 |

Table 55.*Classification Accuracy Winter 2024: Math CBM with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|---------|---------|---------|---------|---------|---------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2362 | 2397 | 2410 | 2423 | 2427 | 2434 |
| Cut Points - Corresponding performance score (numeric) on screener measure | 27 | 25 | 24 | 23 | 22 | 24 |
| Classification Data - True Positive (a) | 816 | 796 | 851 | 574 | 615 | 661 |
| Classification Data - False Positive (b) | 21 | 26 | 23 | 36 | 24 | 26 |
| Classification Data - False Negative (c) | 199 | 200 | 195 | 134 | 195 | 193 |

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Classification Data - True Negative (d) | 203 | 151 | 165 | 177 | 205 | 152 |
| Area Under the Curve (AUC) | 0.92 | 0.91 | 0.92 | 0.88 | 0.88 | 0.88 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.91 | 0.91 | 0.92 | 0.89 | 0.88 | 0.88 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.92 | 0.92 | 0.93 | 0.89 | 0.88 | 0.88 |

Table 56.*Classification Accuracy Summary Winter 2024: Math CBM with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1239 | 1173 | 1234 | 921 | 1039 | 1032 |
| Base Rate | 0.18 | 0.15 | 0.15 | 0.23 | 0.22 | 0.17 |
| Overall Classification Rate | 0.82 | 0.81 | 0.82 | 0.82 | 0.79 | 0.79 |
| Sensitivity | 0.80 | 0.80 | 0.81 | 0.81 | 0.76 | 0.77 |
| Specificity | 0.91 | 0.85 | 0.88 | 0.83 | 0.90 | 0.85 |
| False Positive Rate | 0.09 | 0.15 | 0.12 | 0.17 | 0.10 | 0.15 |
| False Negative Rate | 0.20 | 0.20 | 0.19 | 0.19 | 0.24 | 0.23 |
| Positive Predictive Power | 0.97 | 0.97 | 0.97 | 0.94 | 0.96 | 0.96 |
| Negative Predictive Power | 0.50 | 0.43 | 0.46 | 0.57 | 0.51 | 0.44 |

Table 57.*Classification Accuracy Demographics Winter 2024: Math CBM with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 646 | 609 | 633 | 469 | 530 | 542 |
| Female | 593 | 564 | 598 | 451 | 506 | 481 |
| Gender Unknown | 0 | 0 | 3 | 1 | 3 | 9 |
| American Indian/Alaska Native | 18 | 31 | 13 | 6 | 16 | 16 |
| Asian/Pacific Islander | 93 | 72 | 80 | 56 | 75 | 78 |
| Black | 106 | 111 | 130 | 82 | 106 | 85 |
| Multi-Racial | 239 | 247 | 234 | 178 | 197 | 200 |
| Native Hawaiian/Pacific Islander | 38 | 31 | 47 | 27 | 26 | 41 |
| White | 745 | 681 | 730 | 572 | 619 | 612 |
| Hispanic/Latino | 274 | 268 | 290 | 203 | 229 | 222 |
| Not Hispanic/Latino | 965 | 905 | 944 | 718 | 810 | 810 |
| IEP or diagnosed disability | 239 | 201 | 202 | 137 | 160 | 155 |
| English Language Learner | 107 | 79 | 67 | 46 | 54 | 35 |

Table 58.*Classification Accuracy Spring 2024: Math CBM with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2362 | 2397 | 2410 | 2423 | 2427 | 2434 |
| Cut Points - Corresponding performance score (numeric) on screener measure | 30 | 28 | 22 | 23 | 24 | 25 |
| Classification Data - True Positive (a) | 892 | 815 | 953 | 659 | 580 | 667 |
| Classification Data - False Positive (b) | 42 | 13 | 37 | 38 | 16 | 18 |
| Classification Data - False Negative (c) | 141 | 201 | 99 | 106 | 234 | 135 |
| Classification Data - True Negative (d) | 194 | 169 | 161 | 208 | 207 | 129 |
| Area Under the Curve (AUC) | 0.92 | 0.94 | 0.94 | 0.92 | 0.88 | 0.92 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.92 | 0.94 | 0.94 | 0.91 | 0.87 | 0.92 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.92 | 0.94 | 0.94 | 0.92 | 0.88 | 0.92 |

Table 59.*Classification Accuracy Summary Spring 2024: Math CBM with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1269 | 1198 | 1250 | 1011 | 1037 | 949 |
| Base Rate | 0.19 | 0.15 | 0.16 | 0.24 | 0.22 | 0.15 |
| Overall Classification Rate | 0.86 | 0.82 | 0.89 | 0.86 | 0.76 | 0.84 |
| Sensitivity | 0.86 | 0.80 | 0.91 | 0.86 | 0.71 | 0.83 |
| Specificity | 0.82 | 0.93 | 0.81 | 0.85 | 0.93 | 0.88 |
| False Positive Rate | 0.18 | 0.07 | 0.19 | 0.15 | 0.07 | 0.12 |
| False Negative Rate | 0.14 | 0.20 | 0.09 | 0.14 | 0.29 | 0.17 |
| Positive Predictive Power | 0.96 | 0.98 | 0.96 | 0.95 | 0.97 | 0.97 |
| Negative Predictive Power | 0.58 | 0.46 | 0.62 | 0.66 | 0.47 | 0.49 |

Table 60.*Classification Accuracy Demographics Spring 2024: Math CBM with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 664 | 620 | 637 | 517 | 540 | 501 |
| Female | 604 | 578 | 610 | 493 | 493 | 438 |
| Gender Unknown | 1 | 0 | 3 | 1 | 4 | 10 |
| American Indian/Alaska Native | 19 | 31 | 13 | 10 | 18 | 12 |
| Asian/Pacific Islander | 98 | 73 | 79 | 62 | 78 | 74 |
| Black | 111 | 116 | 135 | 100 | 106 | 78 |
| Multi-Racial | 244 | 250 | 238 | 189 | 196 | 174 |
| Native Hawaiian/Pacific Islander | 39 | 31 | 47 | 32 | 25 | 34 |
| White | 758 | 697 | 738 | 618 | 614 | 577 |
| Hispanic/Latino | 284 | 270 | 297 | 237 | 235 | 199 |
| Not Hispanic/Latino | 985 | 928 | 953 | 774 | 802 | 750 |
| IEP or diagnosed disability | 247 | 209 | 199 | 150 | 147 | 145 |
| English Language Learner | 113 | 80 | 74 | 64 | 54 | 29 |

Table 61.*Classification Accuracy Fall 2023: Reading Composite with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2342 | 2378 | 2411 | 2432 | 2456 | 2468 |
| Cut Points - Corresponding performance score (numeric) on screener measure | -0.330475 | -0.436023 | -0.131578 | -0.014358 | -0.116780 | -0.289957 |
| Classification Data - True Positive (a) | 801 | 847 | 824 | 397 | 444 | 448 |
| Classification Data - False Positive (b) | 54 | 35 | 37 | 16 | 23 | 27 |
| Classification Data - False Negative (c) | 202 | 159 | 211 | 102 | 130 | 121 |
| Classification Data - True Negative (d) | 223 | 167 | 173 | 113 | 117 | 84 |
| Area Under the Curve (AUC) | 0.87 | 0.90 | 0.88 | 0.90 | 0.87 | 0.83 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.87 | 0.90 | 0.88 | 0.90 | 0.87 | 0.83 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.88 | 0.90 | 0.88 | 0.90 | 0.87 | 0.84 |

Table 62.*Classification Accuracy Summary Fall 2023: Reading Composite with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1280 | 1208 | 1245 | 628 | 714 | 680 |
| Base Rate | 0.22 | 0.17 | 0.17 | 0.21 | 0.20 | 0.16 |
| Overall Classification Rate | 0.80 | 0.84 | 0.80 | 0.81 | 0.79 | 0.78 |
| Sensitivity | 0.80 | 0.84 | 0.80 | 0.80 | 0.77 | 0.79 |
| Specificity | 0.81 | 0.83 | 0.82 | 0.88 | 0.84 | 0.76 |
| False Positive Rate | 0.19 | 0.17 | 0.18 | 0.12 | 0.16 | 0.24 |
| False Negative Rate | 0.20 | 0.16 | 0.20 | 0.20 | 0.23 | 0.21 |
| Positive Predictive Power | 0.94 | 0.96 | 0.96 | 0.96 | 0.95 | 0.94 |
| Negative Predictive Power | 0.52 | 0.51 | 0.45 | 0.53 | 0.47 | 0.41 |

Table 63.*Classification Accuracy Demographics Fall 2023: Reading Composite with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 667 | 628 | 640 | 331 | 387 | 372 |
| Female | 613 | 580 | 602 | 296 | 326 | 303 |
| Gender Unknown | 12 | 18 | 14 | 1 | 1 | 5 |
| American Indian/Alaska Native | 17 | 29 | 14 | 7 | 9 | 9 |
| Asian/Pacific Islander | 90 | 70 | 77 | 41 | 55 | 58 |
| Black | 96 | 100 | 117 | 46 | 62 | 58 |
| Multi-Racial | 229 | 240 | 221 | 106 | 122 | 108 |
| Native Hawaiian/Pacific Islander | 35 | 27 | 45 | 20 | 16 | 28 |
| White | 801 | 724 | 760 | 408 | 450 | 419 |
| Hispanic/Latino | 264 | 271 | 277 | 131 | 153 | 144 |
| Not Hispanic/Latino | 1016 | 937 | 968 | 497 | 561 | 536 |
| IEP or diagnosed disability | 260 | 207 | 210 | 90 | 103 | 120 |
| English Language Learner | 105 | 77 | 67 | 37 | 38 | 29 |

Table 64.*Classification Accuracy Winter 2024: Reading Composite with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|---|-----------|-----------|-----------|-----------|-----------|-----------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2342 | 2378 | 2411 | 2432 | 2456 | 2468 |
| Cut Points - Corresponding performance score | -0.289215 | -0.369622 | -0.122265 | -0.072003 | -0.260689 | -0.370871 |

| Evidence (numeric) on screener measure | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Classification Data - True Positive (a) | 788 | 806 | 871 | 456 | 507 | 526 |
| Classification Data - False Positive (b) | 40 | 23 | 34 | 28 | 28 | 23 |
| Classification Data - False Negative (c) | 184 | 164 | 188 | 153 | 103 | 114 |
| Classification Data - True Negative (d) | 214 | 157 | 192 | 134 | 112 | 83 |
| Area Under the Curve (AUC) | 0.90 | 0.92 | 0.90 | 0.87 | 0.87 | 0.87 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.90 | 0.92 | 0.90 | 0.86 | 0.87 | 0.87 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.90 | 0.92 | 0.90 | 0.87 | 0.88 | 0.87 |

Table 65.*Classification Accuracy Summary Winter 2024: Reading Composite with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1226 | 1150 | 1285 | 771 | 750 | 746 |
| Base Rate | 0.21 | 0.16 | 0.18 | 0.21 | 0.19 | 0.14 |
| Overall Classification Rate | 0.82 | 0.84 | 0.83 | 0.77 | 0.83 | 0.82 |
| Sensitivity | 0.81 | 0.83 | 0.82 | 0.75 | 0.83 | 0.82 |
| Specificity | 0.84 | 0.87 | 0.85 | 0.83 | 0.80 | 0.78 |
| False Positive Rate | 0.16 | 0.13 | 0.15 | 0.17 | 0.20 | 0.22 |
| False Negative Rate | 0.19 | 0.17 | 0.18 | 0.25 | 0.17 | 0.18 |
| Positive Predictive Power | 0.95 | 0.97 | 0.96 | 0.94 | 0.95 | 0.96 |
| Negative Predictive Power | 0.54 | 0.49 | 0.51 | 0.47 | 0.52 | 0.42 |

Table 66.*Classification Accuracy Demographics Winter 2024: Reading Composite with SB*

| Sample | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 638 | 595 | 655 | 412 | 400 | 399 |
| Female | 588 | 555 | 627 | 358 | 349 | 341 |
| Gender Unknown | 0 | 0 | 14 | 1 | 1 | 6 |
| American Indian/Alaska Native | 18 | 31 | 15 | 6 | 12 | 13 |
| Asian/Pacific Islander | 93 | 70 | 77 | 52 | 55 | 62 |
| Black | 102 | 107 | 125 | 60 | 62 | 54 |

| Sample | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Multi-Racial | 237 | 242 | 230 | 155 | 135 | 134 |
| Native Hawaiian/Pacific Islander | 37 | 30 | 46 | 25 | 18 | 29 |
| White | 739 | 670 | 781 | 473 | 468 | 454 |
| Hispanic/Latino | 269 | 260 | 290 | 157 | 153 | 155 |
| Not Hispanic/Latino | 957 | 890 | 995 | 614 | 597 | 591 |
| IEP or diagnosed disability | 234 | 195 | 217 | 94 | 107 | 113 |
| English Language Learner | 102 | 72 | 67 | 32 | 35 | 26 |

Table 67.*Classification Accuracy Spring 2024: Reading Composite with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2342 | 2378 | 2411 | 2432 | 2456 | 2468 |
| Cut Points - Corresponding performance score (numeric) on screener measure | -0.27360 | -0.15965 | -0.14045 | -0.16345 | -0.35961 | -0.33043 |
| Classification Data - True Positive (a) | 909 | 836 | 891 | 220 | 275 | 428 |
| Classification Data - False Positive (b) | 52 | 24 | 41 | 9 | 21 | 14 |
| Classification Data - False Negative (c) | 139 | 213 | 184 | 41 | 55 | 93 |
| Classification Data - True Negative (d) | 261 | 191 | 199 | 45 | 71 | 63 |
| Area Under the Curve (AUC) | 0.91 | 0.90 | 0.89 | 0.92 | 0.88 | 0.89 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.91 | 0.90 | 0.89 | 0.92 | 0.87 | 0.89 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.92 | 0.90 | 0.89 | 0.92 | 0.88 | 0.89 |

Table 68.*Classification Accuracy Summary Spring 2024: Reading Composite with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1361 | 1264 | 1315 | 315 | 422 | 598 |
| Base Rate | 0.23 | 0.17 | 0.18 | 0.17 | 0.22 | 0.13 |
| Overall Classification Rate | 0.86 | 0.81 | 0.83 | 0.84 | 0.82 | 0.82 |
| Sensitivity | 0.87 | 0.80 | 0.83 | 0.84 | 0.83 | 0.82 |
| Specificity | 0.83 | 0.89 | 0.83 | 0.83 | 0.77 | 0.82 |
| False Positive Rate | 0.17 | 0.11 | 0.17 | 0.17 | 0.23 | 0.18 |
| False Negative Rate | 0.13 | 0.20 | 0.17 | 0.16 | 0.17 | 0.18 |
| Positive Predictive Power | 0.95 | 0.97 | 0.96 | 0.96 | 0.93 | 0.97 |
| Negative Predictive Power | 0.65 | 0.47 | 0.52 | 0.52 | 0.56 | 0.40 |

Table 69.*Classification Accuracy Demographics Spring 2024: Reading Composite with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 711 | 647 | 673 | 168 | 231 | 335 |
| Female | 649 | 617 | 639 | 147 | 189 | 258 |
| Gender Unknown | 15 | 17 | 15 | 0 | 2 | 5 |
| American Indian/Alaska Native | 18 | 30 | 15 | 2 | 6 | 9 |
| Asian/Pacific Islander | 96 | 72 | 77 | 14 | 22 | 51 |
| Black | 105 | 113 | 128 | 16 | 32 | 49 |
| Multi-Racial | 248 | 248 | 234 | 39 | 55 | 95 |
| Native Hawaiian/Pacific Islander | 39 | 30 | 48 | 4 | 7 | 21 |
| White | 841 | 754 | 801 | 240 | 300 | 373 |
| Hispanic/Latino | 285 | 282 | 299 | 53 | 72 | 125 |
| Not Hispanic/Latino | 1076 | 982 | 1016 | 262 | 350 | 473 |
| IEP or diagnosed disability | 283 | 224 | 223 | 61 | 77 | 97 |
| English Language Learner | 106 | 79 | 74 | 17 | 14 | 18 |

Table 70.*Classification Accuracy Fall 2023: Math Composite with SB with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2362 | 2397 | 2410 | 2423 | 2427 | 2434 |
| Cut Points - Corresponding performance score (numeric) on screener measure | -0.291377 | -0.357777 | -0.241909 | -0.304458 | -0.040674 | -0.241607 |
| Classification Data - True Positive (a) | 743 | 739 | 716 | 573 | 511 | 560 |
| Classification Data - False Positive (b) | 45 | 13 | 13 | 42 | 29 | 19 |
| Classification Data - False Negative (c) | 247 | 228 | 303 | 169 | 298 | 270 |
| Classification Data - True Negative (d) | 168 | 154 | 164 | 183 | 195 | 154 |
| Area Under the Curve (AUC) | 0.84 | 0.92 | 0.89 | 0.86 | 0.81 | 0.84 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.84 | 0.91 | 0.89 | 0.86 | 0.81 | 0.84 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.85 | 0.92 | 0.89 | 0.86 | 0.81 | 0.84 |

Table 71.*Classification Accuracy Summary Fall 2023: Math Composite with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1203 | 1134 | 1196 | 967 | 1033 | 1003 |
| Base Rate | 0.18 | 0.15 | 0.15 | 0.23 | 0.22 | 0.17 |
| Overall Classification Rate | 0.76 | 0.79 | 0.74 | 0.78 | 0.68 | 0.71 |
| Sensitivity | 0.75 | 0.76 | 0.70 | 0.77 | 0.63 | 0.67 |
| Specificity | 0.79 | 0.92 | 0.93 | 0.81 | 0.87 | 0.89 |
| False Positive Rate | 0.21 | 0.08 | 0.07 | 0.19 | 0.13 | 0.11 |
| False Negative Rate | 0.25 | 0.24 | 0.30 | 0.23 | 0.37 | 0.33 |
| Positive Predictive Power | 0.94 | 0.98 | 0.98 | 0.93 | 0.95 | 0.97 |
| Negative Predictive Power | 0.40 | 0.40 | 0.35 | 0.52 | 0.40 | 0.36 |

Table 72.*Classification Accuracy Demographics Fall 2023: Math Composite with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 630 | 592 | 615 | 484 | 536 | 523 |
| Female | 573 | 542 | 578 | 482 | 495 | 470 |
| Gender Unknown | 0 | 0 | 3 | 1 | 2 | 10 |
| American Indian/Alaska Native | 16 | 28 | 13 | 7 | 15 | 13 |
| Asian/Pacific Islander | 92 | 71 | 79 | 61 | 79 | 79 |
| Black | 101 | 101 | 122 | 87 | 100 | 83 |
| Multi-Racial | 228 | 239 | 223 | 185 | 192 | 195 |
| Native Hawaiian/Pacific Islander | 36 | 28 | 45 | 33 | 25 | 40 |
| White | 730 | 667 | 714 | 594 | 622 | 593 |
| Hispanic/Latino | 260 | 256 | 273 | 217 | 233 | 210 |
| Not Hispanic/Latino | 943 | 878 | 923 | 750 | 800 | 793 |
| IEP or diagnosed disability | 237 | 194 | 194 | 146 | 158 | 146 |
| English Language Learner | 105 | 77 | 64 | 61 | 55 | 36 |

Table 73.*Classification Accuracy Winter 2024: Math Composite with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2362 | 2397 | 2410 | 2423 | 2427 | 2434 |
| Cut Points - Corresponding performance score (numeric) on screener measure | -0.31240 | -0.39760 | -0.48654 | -0.36064 | -0.35093 | -0.38393 |
| Classification Data - True Positive (a) | 816 | 796 | 851 | 574 | 615 | 661 |
| Classification Data - False Positive (b) | 21 | 26 | 23 | 36 | 24 | 26 |
| Classification Data - False Negative (c) | 199 | 200 | 195 | 134 | 195 | 193 |
| Classification Data - True Negative (d) | 203 | 151 | 165 | 177 | 205 | 152 |
| Area Under the Curve (AUC) | 0.92 | 0.91 | 0.92 | 0.88 | 0.88 | 0.88 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.92 | 0.91 | 0.92 | 0.88 | 0.88 | 0.88 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.92 | 0.92 | 0.93 | 0.89 | 0.88 | 0.88 |

Table 74.*Classification Accuracy Summary Winter 2024: Math Composite with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1239 | 1173 | 1234 | 921 | 1039 | 1032 |
| Base Rate | 0.18 | 0.15 | 0.15 | 0.23 | 0.22 | 0.17 |
| Overall Classification Rate | 0.82 | 0.81 | 0.82 | 0.82 | 0.79 | 0.79 |
| Sensitivity | 0.80 | 0.80 | 0.81 | 0.81 | 0.76 | 0.77 |
| Specificity | 0.91 | 0.85 | 0.88 | 0.83 | 0.90 | 0.85 |
| False Positive Rate | 0.09 | 0.15 | 0.12 | 0.17 | 0.10 | 0.15 |
| False Negative Rate | 0.20 | 0.20 | 0.19 | 0.19 | 0.24 | 0.23 |
| Positive Predictive Power | 0.97 | 0.97 | 0.97 | 0.94 | 0.96 | 0.96 |
| Negative Predictive Power | 0.50 | 0.43 | 0.46 | 0.57 | 0.51 | 0.44 |

Table 75.*Classification Accuracy Demographics Winter 2024: Math with SB*

| Sample Demographics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 646 | 609 | 633 | 469 | 530 | 542 |
| Female | 593 | 564 | 598 | 451 | 506 | 481 |
| Gender Unknown | 0 | 0 | 3 | 1 | 3 | 9 |
| American Indian/Alaska Native | 18 | 31 | 13 | 6 | 16 | 16 |
| Asian/Pacific Islander | 93 | 72 | 80 | 56 | 75 | 78 |
| Black | 106 | 111 | 130 | 82 | 106 | 85 |
| Multi-Racial | 239 | 247 | 234 | 178 | 197 | 200 |
| Native Hawaiian/Pacific Islander | 38 | 31 | 47 | 27 | 26 | 41 |
| White | 745 | 681 | 730 | 572 | 619 | 612 |
| Hispanic/Latino | 274 | 268 | 290 | 203 | 229 | 222 |
| Not Hispanic/Latino | 965 | 905 | 944 | 718 | 810 | 810 |
| IEP or diagnosed disability | 239 | 201 | 202 | 137 | 160 | 155 |
| English Language Learner | 107 | 79 | 67 | 46 | 54 | 35 |

Table 76.*Classification Accuracy Spring 2024: Math Composite with SB*

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|----------|----------|----------|----------|----------|----------|
| Cut Points - Percentile rank on criterion measure | 20 | 20 | 20 | 20 | 20 | 20 |
| Cut Points - Performance score on criterion measure | 2362 | 2397 | 2410 | 2423 | 2427 | 2434 |
| Cut Points - Corresponding performance score (numeric) on screener measure | -0.33328 | -0.26693 | -0.76846 | -0.43827 | -0.14227 | -0.53191 |
| Classification Data - True Positive (a) | 892 | 815 | 953 | 659 | 580 | 667 |
| Classification Data - False Positive (b) | 42 | 13 | 37 | 38 | 16 | 18 |

| Evidence | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Classification Data - False Negative (c) | 141 | 201 | 99 | 106 | 234 | 135 |
| Classification Data - True Negative (d) | 194 | 169 | 161 | 208 | 207 | 129 |
| Area Under the Curve (AUC) | 0.92 | 0.94 | 0.94 | 0.92 | 0.88 | 0.92 |
| AUC Estimate's 95% Confidence Interval: Lower Bound | 0.92 | 0.94 | 0.94 | 0.92 | 0.88 | 0.92 |
| AUC Estimate's 95% Confidence Interval: Upper Bound | 0.92 | 0.94 | 0.94 | 0.92 | 0.88 | 0.92 |

Table 77.*Classification Accuracy Summary Spring 2024: Math Composite with SB*

| Statistics | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sample Size | 1269 | 1198 | 1250 | 1011 | 1037 | 949 |
| Base Rate | 0.19 | 0.15 | 0.16 | 0.24 | 0.22 | 0.15 |
| Overall Classification Rate | 0.86 | 0.82 | 0.89 | 0.86 | 0.76 | 0.84 |
| Sensitivity | 0.86 | 0.80 | 0.91 | 0.86 | 0.71 | 0.83 |
| Specificity | 0.82 | 0.93 | 0.81 | 0.85 | 0.93 | 0.88 |
| False Positive Rate | 0.18 | 0.07 | 0.19 | 0.15 | 0.07 | 0.12 |
| False Negative Rate | 0.14 | 0.20 | 0.09 | 0.14 | 0.29 | 0.17 |
| Positive Predictive Power | 0.96 | 0.98 | 0.96 | 0.95 | 0.97 | 0.97 |
| Negative Predictive Power | 0.58 | 0.46 | 0.62 | 0.66 | 0.47 | 0.49 |

Table 78.*Classification Accuracy Demographics Spring 2024: Math Composite with SB*

| Sample | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| Male | 664 | 620 | 637 | 517 | 540 | 501 |
| Female | 604 | 578 | 610 | 493 | 493 | 438 |
| Gender Unknown | 1 | 0 | 3 | 1 | 4 | 10 |
| American Indian/Alaska Native | 19 | 31 | 13 | 10 | 18 | 12 |
| Asian/Pacific Islander | 98 | 73 | 79 | 62 | 78 | 74 |
| Black | 111 | 116 | 135 | 100 | 106 | 78 |
| Multi-Racial | 244 | 250 | 238 | 189 | 196 | 174 |
| Native Hawaiian/Pacific Islander | 39 | 31 | 47 | 32 | 25 | 34 |
| White | 758 | 697 | 738 | 618 | 614 | 577 |
| Hispanic/Latino | 284 | 270 | 297 | 237 | 235 | 199 |
| Not Hispanic/Latino | 985 | 928 | 953 | 774 | 802 | 750 |

| Sample | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|-----------------------------|---------|---------|---------|---------|---------|---------|
| IEP or diagnosed disability | 247 | 209 | 199 | 150 | 147 | 145 |
| English Language Learner | 113 | 80 | 74 | 64 | 54 | 29 |

Conclusion: NCII Classification Accuracy

Each criterion measure in NCII is first evaluated if (a) the criterion measure is appropriate, (b) risk defined within an RTI approach to screening, and (c) classification analyses and cut points are adequately performed? In this Technical Report, the answer is yes to all three questions:

- The criterion measure is Smarter Balanced (SB).
- Risk is defined as the 20th percentile rank.
- Classification analyses and cut points were adequately performed with results on true and false positives and negatives reported for each measure, grade, and season.

According to the NCII website, “Area Under the Curve (AUC) is an overall indication of the diagnostic accuracy of a Receiver Operating Characteristic (ROC) curve. ROC curves are a generalization of the set of potential combinations of sensitivity and specificity possible for predictors. AUC values closer to 1 indicate the screening measure reliably distinguishes among students with satisfactory and unsatisfactory reading performance, whereas values at 0.50 indicate the predictor is no better than chance.”

“Full Bubble: All of Q1 – Q3 (below) rated as YES and the lower bound of the confidence interval around the Area Under the Curve (AUC) estimate ≥ 0.80 and Sensitivity ≥ 0.80 and Specificity ≥ 0.80 .

Half Bubble: Q1-Q3 rated as YES (below) and either (a) the lower bound of the confidence interval around the AUC estimate ≥ 0.70 but < 0.80 or (b) Sensitivity ≥ 0.70 and Specificity ≥ 0.70 .

Empty Bubble: Does not meet full or half bubble.”

Area Under the Curve (AUC) Statistic: an overall indication of the diagnostic accuracy of a Receiver Operating Characteristic (ROC) curve. ROC curves are a generalization of the set of potential combinations of sensitivity and specificity possible for predictors. AUC values closer to 1 indicate the screening measure reliably distinguishes among students with satisfactory and unsatisfactory reading performance, whereas values at 0.50 indicate the predictor is no better than chance.

In replicating the chart from NCII, we used their symbols to reflect ratings and criteria.

| Rating | Criteria |
|--------|-------------------------------|
| ● | Convincing evidence |
| ○ | Partially convincing evidence |
| ○ | Unconvincing evidence |
| ■ | Data unavailable |

In applying these criteria, however, it is important to note that the previous tables displaying values reflect the following caveats:

- For AUC, all but a very few of the values were **well above .80**.
- For sensitivity and specificity, all but a very few were **well above .70s and many >.80**.
- Base rates ranged from **.15** (minimum) to **.24** (maximum) and averaged **.18, .19, or .20**
- Overall classification values were typically **above .70 or .75** and often in the **.80 range**.
- False positive and false negative values were typically in the low **.10 to .20 range**.
- The positive predictive power was most often in the mid to **high .90s** which indicates that easyCBM is very accurate in predicting risk at the 20th PR.

| READING MEASURES | Grade | Fall | Winter | Spring |
|-------------------------------------|-------|------|--------|--------|
| <i>Proficient Reading Benchmark</i> | 3 | ● | ● | ● |
| <i>Proficient Reading Benchmark</i> | 4 | ● | ● | ● |
| <i>Proficient Reading Benchmark</i> | 5 | ● | ● | ● |
| <i>Proficient Reading Benchmark</i> | 6 | ● | ○ | ● |
| <i>Proficient Reading Benchmark</i> | 7 | ○ | ○ | ○ |
| <i>Proficient Reading Benchmark</i> | 8 | ● | ○ | ● |
| <i>Oral Reading Fluency</i> | 3 | ● | ● | ● |
| <i>Oral Reading Fluency</i> | 4 | ● | ● | ● |
| <i>Oral Reading Fluency</i> | 5 | ● | ○ | ● |
| <i>Oral Reading Fluency</i> | 6 | ● | ○ | ● |
| <i>Oral Reading Fluency</i> | 7 | ○ | ○ | ● |
| <i>Oral Reading Fluency</i> | 8 | ○ | ○ | ○ |
| <i>Vocabulary</i> | 3 | ● | ● | ● |
| <i>Vocabulary</i> | 4 | ● | ● | ● |

| READING MEASURES | Grade | Fall | Winter | Spring |
|------------------|-------|------|--------|--------|
| Vocabulary | 5 | ● | ● | ● |
| Vocabulary | 6 | ○ | ● | ○ |
| Vocabulary | 7 | ○ | ○ | ○ |
| Vocabulary | 8 | ● | ● | ● |

| COMPOSITE READING MEASURES | Fall | Winter | Spring |
|---|------|--------|--------|
| Proficient • Vocabulary • Fluency – Grade 3 | ● | ● | ● |
| Proficient • Vocabulary • Fluency – Grade 4 | ● | ● | ● |
| Proficient • Vocabulary • Fluency – Grade 5 | ● | ● | ● |
| Proficient • Vocabulary • Fluency – Grade 6 | ● | ● | ● |
| Proficient • Vocabulary • Fluency – Grade 7 | ● | ● | ● |
| Proficient • Vocabulary • Fluency – Grade 8 | ● | ● | ● |

| MATH MEASURES | Grade | Fall | Winter | Spring |
|-----------------|-------|------|--------|--------|
| Proficient Math | 3 | ● | ● | ● |
| Proficient Math | 4 | ● | ● | ● |
| Proficient Math | 5 | ● | ● | ● |
| Proficient Math | 6 | ● | ● | ● |
| Proficient Math | 7 | ○ | ● | ● |
| Proficient Math | 8 | ○ | ● | ● |

| COMPOSITE MATH | Fall | Winter | Spring |
|----------------|------|--------|--------|
| Grade 3 | ● | ● | ● |
| Grade 4 | ● | ● | ● |
| Grade 5 | ● | ● | ● |
| Grade 6 | ● | ● | ● |
| Grade 7 | ○ | ● | ● |
| Grade 8 | ○ | ● | ● |

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